



Majax

Biological Medical erials OPHTHALMOLOGY

ESSAYS, ABSTRACTS AND REVIEWS

VOL. IX.

JANUARY, 1913

No. 2

H. V. WÜRDEMANN, M. D. - - Seattle Managing Editor and Publisher ane Medical Like

EDITORIAL STAFF

CHARLES H. MAY, M. D	100	- NEW YORK
CHARLES H. MAY, M. D. A. A. BRADBURNE, F. R. C. S. P. H. FRIDENBURG, M. D. T. A. WOODRUFF, M. D. WM. R. MURRAY, M. D. MELVILLE BLACK, M. D.	-	- SOUTHPORT
P. H. FRIDENBURG, M. D		- NEW YORK
T. A. WOODRUFF, M. D	-	- CHICAGO
WM. R. MURRAY, M. D	1	MINNEAPOLIS
MELVILLE BLACK, M. D	-	DENVER
MARK D. STEVENSON, M. D. G. I. HOGUE, M. D.		AKRON
G. I. HOGUE, M. D	-	- MILWAUKEE
S. Z. SHOPE, M. D	104	- HARRISBURG
E. F. CHASE, M. D	-	NORTH YAKIMA
G. I. HOGUE, M. D. S. Z. SHOPE, M. D. E. F. CHASE, M. D. FRED TOOKE, M. D.		- MONTREAL
COL. F. P. MAINARD, I. M. S.		
PROF. DR. M. WICHERKIEWICZ -	-	~ CRACOW
DR. K. W. MAJEWSKI	-	CRACOW
PROF. DR. EDMUND JENSEN -		- COPENHAGEN
CASEY A. WOOD, M. D., PH. D.	-	CHICAGO
CHARLES ZIMMERMANN, M. D	-	- MILWAUKEE
EUGENE H. OPPENHEIMER, M. D.	-	BERLIN
L. WEBSTER FOX, M. D., PH. D	100	PHILADELPHIA
S. LEWIS ZIEGLER, M. D		PHILADELPHIA
CHAS. H. BEARD, M. D		CHICAGO
J. FRANKLIN CHATTIN, M. D		NEWARK
MARCEL DANIS, M. D	-	BRUSSELS
PROF. M. URIBE Y TRONCOSO -	-	MEXICO
DR. JOSE DE J. GONZALEZ		
DR. FRANCISCO M. FERNANDEZ -	1000	HAVANA
EDMUND E. BLAAUW, M. D	146	BUFFALO
J. GUTTMAN, M. D	1	- NEW YORK
DR. JULIUS FEJER		- BUDAPEST
PROF. S. KOMOTO	-	TOKIO

ISSUED QUARTERLY

EDITORIAL AND PUBLISHING OFFICES:

711-714 COBB BLDG., SEATTLE, WN., U. S. A. 412297

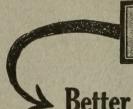
Owned, Edited and Published by and for the Profession PRICE: Per Number, \$1.50 (6s. 6d.). Per Year, \$5.00 (fl. 3s.)

HENRY KIMPTON, 263 HIGH HOLBORN, LONDON, W. C. Agents for Europe and the British Colonies

Sherman Printing and Binding Company, Seatt le, U. S. A.

Entered at Seattle Post Office, Jan., 1909, as Second-Class Matter.

MAY 19 1



"Though much of the Thyroid substance on the market is not active, a little coincidentally administered iodin as an iodid will render it active."—Dr. O. T. Cabome, Journal A.M.A., Nov. 2, 1912.

Better Still: Specify Armour's Thyroids

---which runs uniformly 0.2 per cent. iodin in thyroid combination

Armour's Thyroid Preparations

Thyroid Powder
Thyroid Tablets, 1 grain
Thyroid Tablets, 2 grains
---are therapeutically active

New and interesting literature supplied to physicians upon request



WOOD'S COMPLETE OCULAR TREATMENT

Edited, and many chapters and sections written, by

CASEY A. WOOD, M. D., C. M., D. C. L.

Late Professor of Ophthalmology and Head of the Department, Northwestern University Medical School; Ex-President of the American Academy of Medicine, of the American Academy of Ophthalmology, and of the Chicago Ophthalmological Society; Ex-Chairman of the Ophthalmic Section of the American Medical Association; Mitglied der Ophthalmologischen Gesellschaft, Etc.; Ophthalmic Surgeon to St. Luke's Hospital; Consulting Ophthalmologist to Cook County Hospital, Chicago, Etc.

IN THREE MAMMOTH VOLUMES EXTENSIVELY INDEXED AND PROFUSELY ILLUSTRATED

3,000 Pages-Handsomely Issued

VOLUME I.—OPHTHALMIC THERAPEUTICS

Collaborators: - Drs. Frank Allport, Frank Brawley, Nelson M. Black (Milwaukee), W. Franklin Coleman, Alfred C. Croftan, D'Orsay Hecht, Ernest E. Irons, Alfred N. Murray, Herman D. Peterson.

VOLUMES II AND III.—OPHTHALMIC OPERATIONS

Collaborators:—Drs. Mortimer Frank, Thos. A. Woodruff, A. E. Bulson (Ft. Wayne, Ind.), Gordon Byers (Montreal, Can.), Paul Guilford, Edgar S. Thomson (New York City), Wendell Reber (Phialdelphia, Pa.), E. C. Ellett (Memphis, Tenn.), T. H. Shastid (Marion, Ill.), Wm. H. Wilder, Chas. H. Beard, Wm. T. Shoemaker (Philadelphia, Pa.), John Green, Jr. (St. Louis, Mo.), H. B. Chandler (Boston, Mass.), Chas. A. Oliver (Philadelphia, Pa.), W. O. Nance, Adolf Alt (St. Louis, Mo.), W. Campbell Posey (Philadelphia, Pa.), D. W. Greene (Dayton, O.), Peter Callan (New York City), Myles Standish (Boston, Mass.), Frank Allport, Edward Jackson (Denver, Colo.), H. V. Würdemann (Seattle, Wash.), Howard Hansell (Philadelphia, Pa.), Frank Brawley, A. E. Halstead.

(In each instance Chicago is the residential point where not otherwise stated.)

Complete and separate indexes covering the two grand divisions "Ophthalmic Therapeutics" and "Ophthalmic Operations," and these two divisions sold separately if desired.

Prices, delivered, carriage prepaid,* Ophthalmic Therapeutics (Vol. I), cloth, \$7.00; half-morocco, \$8.50. Ophthalmic Operations (Vols. II and III), cloth, \$15.00; half-morocco, \$18.00.

ISSUED IN UNIFORM SIZE AND STYLE OF BINDING

The three volumes constituting a complete treatise on the medical and surgical treatment of all diseases of the eye, cloth, \$22.00; halfmorocco, \$26.50.

The carriage charges are prepaid by the publishers to all accessible mail and express points anywhere in the world; the privilege, however, is reserved of dividing the volumes into smaller parts, under manila paper covers, where the postal limit of weight demands.

CLEVELAND PRESS

Publishers of Standard Medical Books Exclusively Ogden Avenue and Lincoln Street

CHICAGO

Announcement

OPHTHALMOLOGY is edited, published and issued from 604-612 THE LEARY BUILDING, SEATTLE, WN., U. S. A., to which address should be sent all correspondence pertaining to the editorial and business management.

The contents of OPHTHALMOLOGY is composed of original essays, abstracts and book reviews, the journal being a quarterly review of all the principal articles from all lands and in all languages having to do with the progress of opthalmology.

We assure our readers that no expense will be spared to give them what they desire. Correspondence and criticism are solicited in regard to the management, for the journal is owned, edited and printed by and for the profession.

STAFF.

H. V. Würdemann, M. D., Managing Editor and Publisher, 711-714 Cobb Bldg., Seattle, Wn., U. S. A.

For American and English.—Dr. Charles H. May, 698 Madison Ave., New York City; Mr. A. A. Bradburne, 61 Hoghton St., Southport, England; Dr. P. H. Fridenberg, 60 E. 58th St., New York City; Dr. T. A. Woodruff, 72 E. Madison St., Chicago, Ill.; Dr. William R. Murray, Syndicate Building, Minneapolis, Minn.; Dr. Melville Black, 424 Metropolitan Bldg., Denver, Colo.; Dr. Mark D. Stevenson, 500 Everett Bldg., Akron, Ohio; Dr. G. I. Hogue, 105 Grand Avenue, Milwaukee, Wis.; Dr. S. Z. Shope, 1642 N. 3rd St., Harrisburg, Pa.; Dr. E. F. Chase, 310 Masonic Temple, North Yakima, Wn.

For Canadian.-Dr. Fred. Tooke, 368 Mountain St., Montreal, Canada.

For Indian and Australasian.—Lt. Col. F. P. Maynard, I. M. S., 13 Harrington St., Calcutta, India.

For German.—Dr. Charles Zimmermann, 155 Mason St., Milwaukee, Wis.; Eugene H. Oppenheimer, Bülowstr, 85a, Berlin, Germany.

For French.—Dr. L. Webster Fox, 1636 Spruce St., Philadelphia, Pa.; Dr. S. Lewis Ziegler, 1625 Walnut St., Philadelphia, Pa.; Dr. Chas. H. Beard, 34 Washington St., Chicago; Dr. J. Franklin Chattin, 5 W. Park St., Newark, N. J., and Dr. Marcel Danis, 42 Rue de la Pacification, Brussels, Belgium.

For Italian.-Dr. Casey A. Wood, 72 E. Madison St., Chicago, Ill.

For Spanish and Latin-American.—Dr. M. Uribe y Troncoso, 55 de Tacuba 79, Mexico, D. F.; Dr. Jose de J. Gonzalez, Calle de Pachecos 35, Leon, Mexico, and Dr. Francisco M. Fernandez, 5a Esquina á 4a Havana Cuba.

For Dutch and Swiss.—Dr. Edmund E. Blaauw, 327 Franklin St., Buffalo, N. Y.

For Austro-Hungarian.—Dr. J. Guttman, 54 St. Mark's Place, New York City; Dr. Julius Fejer, Terézkörnt 32, Budapest VI, Hungary.

For Russian and Polish.—Prof. Dr. M. Wicherkiewicz, Wolska II, Cracow, Austria, and Dr. K. W. Majewski, Cracow, Austria.

For Scandinavian.—Prof. Edmund Jensen, Jernbamgade 1, Copenhagen, Denmark.

For Japanese and Asiatic.-Prof. Dr. Komoto, Tokio, Japan.

NOTICE TO CONTRIBUTORS

The editors and publisher of Ophthalmology suggest the following to contributors:

Manuscripts must be typewritten and written only on one side of paper.

There should be a double space between each line of the manuscript to allow of corrections.

Draw a line along the margin of paragraphs to be printed in smaller type, i. e., clinical history in reports of cases, microscopic and pathologic findings, etc.

Words to be printed in italics to be underscored once; SMALL CAPITALS underscored twice; LARGE CAPITALS underscored three times.

The title of the paper should indicate the contents. Subtitles may be used under the main title and as separate headings in text.

All forms of drawings and paintings are applicable to the modern phototint and line processes, which will be used in the reproduction of illustrations for this magazine.

Colored illustrations will be used where possible; others printed as inserts and in the text, depending on their character and quality.

As few authors have sufficient artistic ability, it is advisable to have the original drawings made by a medical artist supervised by the author.

Authors will receive proofs for revision, which they should correct and return without delay. We beg to remind contributors that changes in the copy cause additional expense, and therefore request that alterations be limited to what is of essential importance.

Authors upon request will receive gratuitously 100 reprints, without covers, of their articles. If a greater number or covers be desired, notice of which should be given at the head of the manuscript, they will be furnished at the following prices from the office of Sherman Printing & Binding Company, 807-9-11 Western Avenue, Seattle, U.S.A.

PRICE LIST FOR REPRINTS.

Manaham				
Number of Copies.	4 Pages.	8 Pages.	12 Pages.	16 Pages.
100	\$ 3.00	\$ 4.00	\$ 5.00	\$ 7.00
200	3.75	5.00	6.75	8.50
300	4.50	6.00	8.00	10.00
400	5.25	7.00	9.25	11.50
500	6.00	8.00	10.50	13.00
750	8.00	10.00	12.50	15.50
1000	10.00	12.00	14.50	17.50
Additional				
1000	9.00	11.00	13.50	16.50

1300 CASES OF RHEUMATISM

TREATED WITH

RHEUMATISM PHYLACOGEN.

MORE THAN

1100 RECOVERIES.

Full information concerning this remarkable therapeutic agent sent to physicians on request.

PARKE, DAVIS & CO.

DETROIT, MICH.

ORIGINAL ARTICLES.

1.	Observations Concerning Foreign Bodies Within the Eye or Orbit. By W. K. ROGERS, M. D., Columbus, O	53
2.	The Operative Treatment of Keratokonus. By PROF. DR. GRUNERT, Bremen	.63
3.	Heredity in Relation to the Eye. By George Franklin Libby, M. D., Denver, Colorado	.65
4.	Roentgenography of Foreign Bodies in the Eyeball. By G. H. STOVER, M. D., Denver, Colorado	.78
5.	Colored Glasses for Hunting and as a Protection Against Snow and Other Light. By Sanitatsrat Dr. Fritz Schanz, Dresden, Germany	182
6.	Visual Symptoms of Accessory Sinus Disease. By Percy Fridenberg, M. D., New York City, N. Y	186
7.	The New Antiglaucomatous Operations. By Dr. Louis Dor, Lyons, France; translated by L. Webster Fox, M. D., Philadelphia, Pa.	195
	ABSTRACTS.	
	BLYOPIA AND BLINDNESS. The Treatment of Word-Blindness, Acquired and Congenital.	
BAC	Colobomata of the Eye—Congenital Bilateral Aniridia. TERIOLOGY The Value of the "Direct Smear" in the Bacteriology of Conjunctivitis, With Analysis of a Thousand Cases—The Pathology of Interstitial Keratitis in Trypanosomiasis and Syphilis.	205
CAT	The New Operation for Extraction of Cataract—A New Method of Extraction of Cataract in the Capsule—Intracapsular Cataract Operations—To the Question of Peristatic Contractions of the Sphincter of the Pupil—Simple Senile Cataract Extraction With Incision of the Root of the Iris—Simple Flap Extraction of Senile Cataract with Peripheric Incision of the Iris—Remarks on Elschnig's Article on Cataract Extraction—Daviel's Knife for Cataract Extraction in Our Days—The Treatment of the Early Stages of Senile Cataract—Determining the Maturity of Senile Cataract From the Biochemical Reaction of the Lens—To the Chemistry of Senile Cataract—Absorption of Traumatic Cataract.	207
	ORIOID	
	Tary Body Tuberculous Cyclitis.	
CIE	RCULATION Recurrent Retinal Hemorrhages Occurring in the Young With the Report of a Case—Embolus of the Arteria Centralis Retinae—Angiosclerosis of the Retina an Important Differential Diagnostic Symptom.	213

	216
Treatment of Gonorrheal Conjunctivitis in the Adult—Causes of Ophthalmia in the New-Born—Treatment and Prevention of Blennorrhoea of the New-Born—Symblepharon After Corneal Ulcer—On the So-Called Parinaud's Conjunctivitis.	
CORNEA Treatment of Acute Staphyloma of the Cornea; the Use of	220
Adrenal Gland Extractives—Keratoconus; Report of a Case—Etiology of Keratoconus—Keratitis Punctata Superficialis (Fuchs) and Its Relation to Menstrual Disturbances—Clinical and Statistical Remarks on Serpent Ulcer of the Cornea, With Especial Consideration of Intraocular Tension—Annular Ulcer of the Cornea—Infectious Suppurative Keratitis—Marginal Dystrophy of the Cornea of a Young Man—Report of Six Cases of Degeneration of the Cornea in the Same Family (Nodular Keratitis).	
GENERAL DISEASES AND THE EYE	225
Goiter—Hyperthyroidism; Its Treatment—On a Case of Paralysis of the Fourth Nerve in the Course of Typhoid—The Ocular Lesions of Polymorphous Erythemata—Two Cases of Pemphigus Affecting the Eyes—The Eye in Locomotor Ataxia—Tubercular Affection of the Uvea—Retinal Lipaemia in Severe Diabetes—Relation Between Certain Functional and Organic Eye Troubles and Intestinal Autoinfection or Autointoxication.	
GLAUCOMA Operative Treatment of Glaucoma—Glaucoma and Blood Pres-	230
sure—A New Method of Treating Glaucoma With Pilocarpin and Dionin-Merck—Changes in the Intraocular and Ocular Tension—Results Obtained With Schiotz's Tonometer on Normal and Glaucomatous Eyes—Pathogenesis of Glaucoma—Contribution to the Pathogenesis of Glaucoma—Investigations on the Asserted Increase of Adrenalin in the Blood in Primary Glaucoma—Secondary Glaucoma in Interstitial Keratitis, With Report of a Case—Acute Glaucoma in Both Eyes—Linear Sclerotomy for Chronic Glaucoma—A New Method of Treatment of Glaucoma by Pilocarpin and Dionin.	
INJURIES Argyrosis—The Injurious Action of Chrysarobin on the Eyes	236
—Glaring by the Sun—Case of Expulsive Hemorrhage After Cataract Operation and Formation of Cavernae in the Optic Nerve—Case of Evulsion of the Optic Nerve—Another Au-	
topsy Report of a Case of Traumatic Enophthalmus—Extraction of a Piece of Copper From the Vitreous—Extraction of Pieces of Copper From the Vitreous—An Unusual Case of Steel Injury—Report of Two Cases of Injury to the Eye by	
Pieces of Steel, One a Double Perforation—The Removal of Foreign Bodies From the Cornea and Conjunctiva—The Treatment of Eyes Injured by Foreign Bodies—Traumatic Cataract of Unusual Origin—Fracture of the Nose With Ocular and Aural involvement—Rupture of the Deep Membranes of the Globe Following a Violent Elbow Thrust—Perforation of the Orbital Vault—Injury to the Eye Brought on During an Observation of the Sun's Eclipse.	
INSTRUMENTS AND METHODS OF EXAMINATION	245
A New Knife—A New Bottle With Eye Pipette, Which Can Be Sterilized—A New Apparatus for Illuminating the Field of Operation—Stilet Needle for the Removal of Foreign Bod- ies From the Cornea and Similar Manipulations—A New Instrument for Measuring the Pupillary Distance—A Con-	

wenient Attachment for the Dezeng Electric Heatinght Modern Photometric Equipment—On Bjerrum's Method of Examination of the Visual Field and Its Results in Glau- coma—The Necessity for the Use of Color Names in a Test for Color Blindness—The Detection of Alleged Visual De- fects.	
To the Question of Peristaltic Contractions of the Sphincter Pupillae.	
LACRIMAL APPARATUS Polypoidal Formation in the Lacrimal Sac—Congenital Absence of Both Lower Puncta; Lifelong (Double) Sacryocystitis; Apparent Cure From Dacryocystorhinostomy.	
Lens Coloboma Lentis.	251
Materia Media and Therapeutics	
MEDICO LEGAL	263
MEDICAL SOCIOLOGY Vocational Disabilities Due to Defective Color, a Handicar More Common Than Generally Supposed—Saving Infants Eyes—On Occupational Diseases of the Eye.	,
Miscellaneous Making the Blind Hear Light—Reflex Pain in Ocular Conditions—Some Effects of Bright Light on the Eyes—The Influence of Electric, Acetylene and Oil Headlights Upon Light Operation of Trains and Train Signals.	
A New Mode of Measuring Muscle Balance—Investigations of the Position of Rest of the Eyeball—Investigation Into the Relation of Ocular Imbalance and Auditory Affections—Miners' Nystagmus—The Etiology and Treatment of Miner' Nystagmus—Nystagmus in Miners—A New Operation fo Squint—Some Experiments to Ascertain the Security of Sutures for Squint Operations—The Operative Treatment of Concomitant Strabismus—To the Technic of Advancement of Ocular Muscles.	e s r f f
Myopia Eye Training for the Cure of Functional Myopia—To the Question of Myopia.	. 274

OPERATIONS Trephining the Limbus for Adherent Staphylomatous Leucoma	276
—Definite Resection of the Outer Orbital Wall—New Operative Procedures—Implantation of Fat in Cases of Enucleation	
and Eventration of the Eyeball—Fat Implantation Into Ten- on's Capsule After Enucleation—A New Operation for Ptosis —To the Technic of Iridectomy—Two Cases of Myopic Reti-	
nal Detachment Cured by Total Sclerotomy—New Operative Treatment in Detachment of the Retina and High Grade Myopia.	
	280
Some Physiological Consideration in Lighting Problems—Recent Progress in Illumination—Making Artificial Daylight.	
OPTIC NERVE Hereditary Optic Atrophy With X-Ray Findings—Choked Disc and Its Palliative Treatment—On Decompression Operations in Diseases of the Optic Nerve—Clinical and Microscopical Contributions to Solitary Tuberculosis of the Optic Disc.	282
Orbit	285
Pathology	288
Physiology	291
tion of the Pupil in Near Vision—The Intraocular Pressure of the Experimentally and Voluntarily Moving Eye.	
REFRACTION AND ACCOMMODATION	295
RETINA Juvenile Periarthritis of the Retina—Detached Retina; Its Surgical Treatment—The Pathogenesis of Albuminuric Retinitis —Contributions to the Knowledge of Tuberculous Changes of the Retina.	295
Sinuses Intraorbital Lesions Secondary to the Disease of the Accessory Sinuses of the Nose—Mucocele of the Frontal Sinus—Dacry- ocystitis and Affections of the Ethmoidal Sinus—Injury of the Optic Nerve Produced by Empyema of the Accessory	297
Sinuses—Enlargement of the Blind Spot an Early Symptom of Posterior Accessory Sinus Disease—Enlargement of the Blind Spot (Van der Hoeve's Symptom) and Central Scotoma in Diseases of the Posterior Nasal Sinuses.	
Sympathetic Ophthalmitis	300
Toxicology	302
Amblyopia From Inhalation of Methyl Alcohol—Histological Findings in the Eye and in the Central Nervous System in Fatal Cases of Acute Methyl Alcohol Intoxication.	

Trachoma Treated by Jequirity—A Recent Case of Trachomatous Pannus Cured by Inoculation of Blennorrhoic Secretion—The Modern Surgical Treatment of Advanced Trachoma.	304
TUMORS Metastatic Carcinoma of the Eye—Tumor of the Pons-Cerebellar Angle—Simple Hemangioma of the Iris at the Pupillary Margin—Small Round-Cell Myo-Sarcoma of Orbit With Extension Into Eyeball—Another Case of Chloroma—The Early Symptoms and the Ocular Findings in a Case of Cerebral Tumor—Two Cases of Epibulbar Sarcoma.	305
VITREOUS Muscae Volitantes—Washing of the Vitreous in Cases of Incurable Bleeding in the Vitreous.	308
Vision Visual Memory—The Wonders of Light—Impairment of Vision After Severe Hemorrhage.	308
VISUAL FIELD The Forms of the Visual Field in Tabic Atrophys of the Optic Nerve—Contribution to the Etiology of Bitemporal Hemianopsia With Especial Consideration of Diseases of the Hypophysis—A Case of Bilateral Homonymous Hemianopsia, With Alexia and Agraphia after Labor.	309
BOOK REVIEWS.	
CAESAR—Contribution to the Estimation and Treatment of Com- comitant Strabismus	
von Hippel—Tasks of Glaucoma Treatment Controlled by the Tonometer of Schioetz	
Schiess—Brief Guide to the Anomalies of Refraction and Accommodation	313
	314
von Helmholtz—Description of an Ophthalmoscope for Examining the Retina in the Living Eye	315
ADAM—Ophthalmoscopic Diagnostics With Typical Pictures of the Background	316
OSTWALD—The Energetic-Imperative	316
SIEGRIST—The History of Ophthalmology, Especially That of the Eye Clinic of Berlin, Switzerland (3 parts)	317



CHANGE OF ADDRESS

Ophthalmology

JANUARY 1, 1913

Removed from Leary Building

T₀

711-714 Cobb Building

SEATTLE, WN., U. S. A.



OPHTHALMOLOGY

ESSAYS, ABSTRACTS and REVIEWS

Vol. IX.

JANUARY, 1913.

No. 2.

Original Articles.

OBSERVATIONS CONCERNING FOREIGN BODIES WITHIN THE EYE OR ORBIT.

W. K. ROGERS, M. D., COLUMBUS, OHIO.

The amount of literature available on this subject is considerable and I confess to a feeling of diffidence in adding to it without the opportunity of dealing exhaustively with its pathology and making extensive comparisons and deductions from what has already been contributed. My object at this time is to present some deductions from the experience of one observer with different procedures under varying conditions, which I have drawn from 116 cases during the past 19 years, with incidental comments on various complications and some of the more interesting cases.

Our point of view centers about the factors of X-Ray diagnosis and the development of the electro-magnet, each of which is necessary to the other. The use of a small permanent magnet for the removal of surface foreign bodies dates back to the time of Hildanus in 1646; McKeown of Belfast, in 1874, was probably the first to use it for the removal of a foreign body from the vitreous, and in 1877 Hirschberg introduced an electro-magnet of about 1 ampere, which greatly stimulated the interest that was being aroused in the subject. It is my impression that the Lippincott portable magnet of about 1 ampère, introduced in 1889, was the first that was adapted to the ordinary public service current, those of Johnson and Sweet being modifications in size and shape but having about the same ampèrage. In 1902 the stationary giant magnet of Haab, with a capacity of 13 ampères was introduced and became very generally used. In 1905 Dr. Bowen of Columbus designed a giant magnet of 20 ampères which I have found much superior to the smaller forms of this type. With the more recent solenoid I have had no experience. It has hardly the power of the Sweet magnet, and while the manipulation of the detached tips gives a certain delicacy of technique, there are limitations which would seem awkward.

In 1896 my associate, Dr. Clark (with the help of the late Pro-

fessor Thomas), and Dr. C. H. Williams of Boston, presented to the American Ophthalmological Society cases in which X-Ray examinations aided in the diagnosis of metallic foreign bodies in the globe. It was not, however, until the introduction of Sweet's localizing device that we became able to approach these cases with any degree of assurance and there are few pleasanter contrasts that we have to contemplate than the state of mind in which we now undertake these cases, compared with that which existed before the advent of X-Ray localization. This is fundamental, while forms and types of magnets are more or less details of technique. But nowadays it is with details of technique that we are largely concerned, and it is partly for the purpose of comparing results obtained by the Lippincott type with those of the Haab type that this paper is written.

This series of 116 cases includes only those in which the question of dealing with the foreign body was a factor. In 102 cases, the substances were found radiographically, with 88 localizations; 93 were in the globe (81 behind the lens, 5 in the lens and 7 in the iris or anterior chamber) and 23 in the orbit. 2 of the foreign bodies were wood, 2 glass, 3 stone or brick, 7 copper, 6 lead, and 96 iron or steel. 93 magnet operations were done, 2 of which were for fragments of steel in the orbit and 91 for substances in the globe; 6 cases declined operation, and 2 had their operations elsewhere. In 14 the Hirschberg or Gruening magnet was employed, 42 were done with the Lippincott magnet or a flexible shaft extension of about the same amperage attached to the giant magnet, which I find more convenient to manipulate, and 12 exclusively with the giant magnet. In 22 the Lippincott or shaft-extension supplemented the latter—in 16 cases the foreign body being drawn into the anterior chamber for removal by the smaller magnet, and in 6 out of 7 in which the giant magnet failed to dislodge it. In no case did the Lippincott magnet or flexible shaft fail to remove a foreign body located in the interior of the globe. This would seem to show a distinct superiority for this type of magnet. But closer analysis of conditions has led me to a different conclusion.

There were 10 operative failures out of 14 cases with the Hirschberg magnet, none of which had the benefit of X-Ray examinations. There were 6 failures with the Lippincott magnet among 12 cases submitted to simple X-Ray examination out of 54 cases in which it, or the flexible shaft was used.

In considering the results obtained with the small high-power magnet of the Johnson, Sweet or Lippincott type, or the flexible shaft-extension, as compared with those of the giant magnet, some classification is necessary. In 64 of these cases the smaller magnet was used; in 35 the larger. In 22 both were used—16 times designedly, and 6 times because of failure in 7 cases with the giant type. These 7 failures were all cases of encapsulation of from 1 month to 4 years' standing, with substances less than 2 m.m. in area; 2 of these eyes had 6/6 vision before operation; 3 had from 6/100 to 6/20, and 2 had object perception; 3 were quiet and 4 occasionally irritable. After operation 1 became phthisical and required enucleation; light perception was retained in 4, object perception in 1, and 6/100 in 1.

In the 42 hand-magnet cases 30 were treated within a week—the majority within 24 hours—from the time of injury; 5 within a month, 4 within a year, 2 within 2 years and 1 in 4 years. In 7 the object was in the lens, iris or anterior chamber; in 35 it was in the vitreous, ciliary body or posterior coats of the eye. In 28 cases the area was less than 4 m.m., and in 7 it was greater. In the anterior cases vision before operation varied from 6/6 to shadow perception, impairment existing only in 2 cases of infection or when the lens was injured. Functional preservation or restoration depended on the extent to which the traumatic cataract was dealt with except in the infected cases. The same is true of the 5 anterior cases of the giant magnet group in which there were no infections. I have disposed of all of the anterior cases in 1 group as they are of less interest than the posterior ones.

In 35 posterior cases out of 42 exclusive hand magnet procedures, 14 had 6/6 vision before operation, 11 had 6/100 to 6/50 and 10 had shadow or light-perception; 19 had traumatic cataract. After operation, including more or less complete extraction of lens cortex and division of membrances in 13 cases, and extensive spontaneous absorption in 2, 6/6 vision was obtained in 6 cases, 6/100 to 6/50 in 9, and shadow-or light-perception in 16. Four cases required enucleation on account of panophthalmitis. Later 1 of the first, 3 of the second and 2 of the third group required enucleation for secondary glaucoma or chronic cyclitis. 10 eyes, or about 33% of the 35 were thus lost; about 15% retained 6/6 vision, 20% retained 6/100 to 6/50 and 32% had light-perception. Primary operative success 100%. In this group of cases an effort was made in 14 to remove the foreign body through a posterior incision by the small magnet without introducing the tip beyond the lips of the wound; it was successful in 6 cases, but notwithstanding this, vision was greatly impaired from hemorrhage in 4 of these cases, 3 of which had 6/6 vision before operation. Functional impairment could be accounted for by pupillary occlusion and hemorrhage in 11 cases, disorganized vitreous, detachment of the retina, dislocation of the lens, ruptured coats or inflamation in 19 cases. The 5 cases preserving 6/6 vision were all dealt with within 48 hours, and the foreign body was less than 5 m.m. in area. Detachment of the retina, or extensive hemorrhage or traumatic disorganization of the vitreous occurred in all but 2 of the older cases; in these 2 cases the fragment had been accurately located against the wall of the globe and was directly cut down upon with the operative incision; it occurred in 7 of the recent cases when the fragment was more than 5 m.m. in area.

The giant magnet was used exclusively in only 12 cases-all within 3 days, and most within 24 hours from the time of injury, and in all the foreign body was less than 5 m.m. in area—the majority from 1 to 3 m.m.—located behind the lens in 10 cases, in the lens in 1, and in the anterior chamber in 1. In all of these cases removal occurred through the original wound; in 6 the fragment was drawn around the iris through the pupil; in 5 it became engaged in the base of the iris and was drawn through it, with no perceptible ill effect. Reaction was slight in all these cases-much less than with the small magnet and posterior incision, and no disorganization of structures could be observed from the operation. Traumatic cataract was present in 4 cases and extensive vitreous hemorrhage in 3. Before operation vision was 6/6 in 3 cases 6/20 to 6/10 in 2, 6/100 to 6/50 in 3, and shadow-perception in 4. After operation, including subsequent removal of opaque cortex, vision was 6/6 in 5 cases (42%) including all that had 6/6 vision before operation, 6/20 to 6/10 in 4 (33%) and 6/100 to 6/50 in 3 (25%), with no subsequent general trophic disturbances or untoward operative sequelae and an operative success of 100%. This is, of course, a small group, of selected cases affording the most favorable opportunity for the giant magnet, but it is precisely this matter of selection that seems to me important.

We must add to the foregoing group the 16 cases in which an accessory magnet was used to remove the foreign body from the anterior chamber into which it had been drawn by the large magnet and 7 in which the latter had failed to dislodge it, making 35 cases. The foreign body was located back of the lens in 30 cases—3 of which were lodged in the wall of the globe; in the ciliary body in 4; in the lens 3, and in the anterior chamber 2; it was less than

5 m.m. in area in all; it had been present less than 7 days in 19 cases, from 1 to 4 weeks in 6, from 1 to 6 months in 4, from 6 to 12 months in 3, about 2 years in 2 and 4 years in another. Before operation vision was 6/6 in 9 cases, 6/20 to 6/10 in 6, 6/100 to 6/50 in 11, and light or shadow-perception in 9. Traumatic cataract was present in 9 cases and extensive vitreous or tissue derangement in 11; there was a small hypopyon in 2 cases. The large magnet failed to bring the foreign body into the anterior chamber in 7 cases—25%; permanent vision after operation, including removal, or absorption of cortex and division of membrane, in the 30 posterior cases, vision=6/6 in 7 (23%); 6/20 to 6/10 in 4 (13%); 6/100 to 6/50 in 8 (27%), and light perception in 5 (17%); 6 eyes (20%) became phthisical and eventually required enucleation.

These cases might be differently grouped to show correspondingly different results. If the 23 instances of combined magnet procedure were considered separately the tabulation would be much less favorable than with the 12 cases of giant magnet procedure added. On the other hand cases could be selected from the small magnet group that would give it a more favorable showing but there is no logical basis for selection, as in the case of the giant magnet. I have endeavored to present these groups to show the situation as it has developed for me, which is that the portable magnet now in general use affords the highest percentage of operative success, so far as the mere removal of a foreign body from the eye is concerned; it is better adapted to the removal of encapsulated foreign bodies of long standing than the giant magnet, or foreign bodies located in the anterior structures if the original wound has united. But when the foreign body is small—less than 3 or 4 m.m. in area and can be drawn into the anterior chamber, and out through the original wound, or by a supplementary magnet through a marginal incision, a higher percentage of good vision and quiet eyes will result with the giant magnet than with the small magnet and posterior incision. If I could have but one magnet at my disposal it would be of the portable type, but I would be as reluctant to be deprived of a giant magnet for suitable cases, as I would to depend on it for all cases.

The ideal procedure when the foreign body is not over 3 m.m. in area and not embedded in the posterior coats of the globe, is to bring it forward with the giant magnet into the anterior chamber and out through the original wound if located in the cornea, and not united. This should be attempted in all such cases, using the

portable or auxiliary magnet for delivery through a marginal incision when the corneal wound has united, which, I think, does not add any material complication to the procedure, or through a posterior incision if the large magnet fails. When the foreign body is as much as 5 m.m. in area, or if it is embedded in the posterior wall of the globe, or if it has entered through a wound back of the ciliary zone which is still open, the portable or auxiliary magnet with a posterior incision as close to the foreign body as feasible is to be preferred. As little traumatism as possible should be inflicted by introduction of the magnet. But in spite of every caution more extensive hemorrhage, either from the incision or manipulation, with disturbance of vitreous and secondary detachment will occur with this procedure than with the large magnet.

The method of using the giant magnet is of some importance, and it is possible that it may have proved disappointing at times because of haste in its manipulation. Some of the most gratifying results in this series have been obtained after an hour's coaxing. On this account the recumbent position is desirable, though in some ways less convenient than sitting. Otherwise the original suggestions of Haab in regard to gradual increase of current and utilization of the directions of the magnetic field and avoidance of the ciliary body, have given me the best results. I have not noted any special harm from drawing a small fragment through the base of the iris, though I try to avoid it. I prefer not to use the giant magnet for foreign bodies, no matter how small, if they are engaged in the back wall of the globe, or have been located near it long enough to become encapsulated, as they are apt to jump if dislodged, and damage the lens or ciliary body, in the direction of which the line of traction must usually be made.

I have alluded to accurate X-Ray localization as being fundamental in dealing with foreign bodies involving the eye. To the ophthalmologist this statement is superfluous but in the hope of possibly interesting some of our friends in the wider fields of medicine who are often called upon to deal with these cases, I would like to emphasize its importance. The location of the wound, the appearance of the eye, and the impression of the patient are of no negative value whatever, with a history of injury by a foreign body that can not be positively accounted for. One case in this series showed me the object regarded as responsible for his injury and I can still recall the picturesque profanity of his disbelief in the mysteries of X-Ray machines; the profanity of his conversion was equally picturesque and original—and unfit for publication. Radio-

graphic diagnosis can be so generally depended upon that we are justified in acting upon its findings in all positive cases. I have had but 2 cases in 102 examinations in which X-Ray findings were not verified. In 1 a small particle of steel was localized just back of the lens, but it could not be found with either magnet, and Dr. Greene, of Dayton, who subsequently removed the eye reported that there was none present. In the other, a child about 2 years old, 4 radiographs were made—1 under asesthesia—and all were negative. The appearance of the eye was very suggestive, however, and indications of pain were elicited by the approach of the magnet with which a fragment of steel 1 m. m. in area was eventually removed. with preservation of normal vision. The age of the patient doubtless accounted for imperfect fixation that prevented the definition of a shadow—a contingency that must be borne in mind and eliminated whenever possible. In 8 cases of this series—nearly 7%—no foreign body was suspected.

Failure to identify a foreign body when present in the posterior portion of the globe is apt to result in serious consequences. There are few surgical conditions about which the weight of opinion is more united than that a metallic foreign body back of the lens must be removed, or the eye enucleated, for the safety of its fellow—instances of long toleration to the contrary notwithstanding. In the present series there were 9 cases of sympathetic disease from foreign bodies that had been present from 8 weeks to 16 years; 4 retained normal vision after enucleation and more or less active local and constitutional treatment; 2 retained quiet eyes with defective but useful vision—in 1 the foreign body was a chip of stone; 2 had useful vision, which decreased with successive attacks of irritation, and 1 became entirely blind. 3 of these cases had not suspected the presence of a foreign body.

In this group there were two cases, less serious, but of some interest. In 1 a traumatic cataract for which alone relief was sought had been present 4 years, in a perfectly quiet eye; a chip of steel 2 m.m. in area was localized in the vitreous, radiographically, and removed by combined magnet procedure; 6/20 vision was obtained after extraction of the opaque lens. It required 50 minutes to draw the foreign body into the anterior chamber. In the other a minute unsuspected foreign body had been lodged in the periphery of the lens 2 years, causing partial cataract with vision of 6/15. Upon discovering the cause an effort was made with the giant magnet to remove it, but although the lens could be seen to move with each closure of the circuit, it could not be dislodged, and was allowed

to remain, as I could give no positive assurance that more radical measures would result in any improvement of vision, or that the foreign body would result in harm where it was.

The lens and anterior tissues seem to be more tolerant of extraneous matter than the deeper structures. 6 cases in this series had substances so located for periods varying from 1 to 15 years, without apparent mischief. This must be regarded, however, as largely a matter of accident, and whenever feasible they should be removed.

Lead and non-metallic substances, are said to be better tolerated in the vitreous than other metals. I have observed this to be true in the case of glass, one instance of which I have had under observation for 9 years—a small fragment of a chemical flask entered the cornea, and passed through the lens, causing a traumatic cataract that became largely absorbed. The late Dr. Bull saw the case in consultation and concurred in the plan to let it alone. But in 1 case sympathetic disease was caused by a chip of stone. In regard to lead, the 6 cases in this series prove little. One had 3 shot enter the orbit without injuring the globe; in another a shot passed through the globe and lodged in the orbit, causing considerable hemorrhage and tissue disturbance with corresponding impairment of vision, but eventually retaining a quiet eye; another with a shot in the vitreous, and traumatic cataract, developed sympathetic uveitis in 6 months, having declined enucleation at the time of injury; in 2 other similar cases with rather more traumatism, enucleation was done at once; in 2 cases both eyes were so badly damaged that they were let alone; the eyes eventually became quiet and the cases lost sight of—one having 2 shot in one eye and one in the other with several in the orbits, had light-perception in one eye, and the other with one shot in each eye, as well as several in the orbits, had light-perception in both when last seen. It is my impression that prompt enucleation is advisable in all of these cases if one eye is uninjured.

The size of the foreign body, extent of traumatism and location of the wound are important. I have not been able to save any eyes when the foreign body has been over 1 c.m. in area, or when the globe has been extensively damaged, especially in the ciliary zone. Prompt enucleation seems to be the conservative procedure in such cases; indeed I am developing a growing conviction that it should be advised instead of a magnet operation, with its often false sense of security, in a much larger proportion of cases than is customary. The question of persistent irritation also deserves serious considera-

tion. This is usually due to disturbances of nutrition or retinal detachment that eventually result in shrinkage or glaucoma, and if ciliary injection persists after a period of 3 months, enucleation becomes advisable. There were 17 such instances in this series, and 8 in the foregoing class of excessive traumatism, making 25, or 22%, in which primary enucleation would have been better than the magnet procedure. In 9 of these cases, or nearly 8% of the total, sympathetic irritation actually involved the other eye and was a potential factor in a much larger percentage.

Infection is singularly rare in these injuries, considering the surroundings in which they occur—the heat generated by the formation of the foreign body apparently being sufficient to render it sterile in most cases. There were only 5 instances involving the eye in this series, and 3 involving the orbit. In 2 cases there was a small hypopyon at the time of operation, but both recovered with good vision; in the other 3 ocular cases panophthalmitis developed, and the eyes were enucleated. In the treatment of these conditions as well as sympathetic disease and all profound infections it is my impression that marked benefit results from the employment of sub-conjunctival and deep orbital injections of mercury at intervals of from 1 to 3 days. My preference is for mercuric chloride in 1 c. g. doses of a 1/1000 solution containing 1% sodium chloride.

Foreign bodies in the orbit are usually innocuous if sterile. As a rule it is not advisable to attempt their removal unless they cause trouble. In 2 of the 19 cases in this series large metallic foreign bodies were removed after dividing the over-lying tissues because of restricted motion in the globe—one was lodged against the globe behind the equator, and one in the inferior rectus muscle; 2 were of wood and one of brick causing abscesses in the evacuation of which they were removed. One fragment of iron 3 c. m. long by 1 wide also developed an abscess with similar fate; the rest were not disturbed.

The personal equation is worthy of some attention. The occupation, age, social and economic status, and temperament of an individual, and the presence of complicating diseases exert an important influence on the urgency of protective enucleation, which is always a deplorable alternative, and the prognosis in all foreign body cases is precarious; some of the most promising conditions develop trophic disturbances that eventually lead to disaster. The ultimate fate of all the cases in this series is, of course, unknown to me. But from the fact that 11, with good primary results, subsequently returned with more or less serious secondary degenera-

tive changes, and the cases that have come to me after having been treated elsewhere, I am led to believe that many more must have passed into other hands for similar conditions. It is obvious, therefore, that our most favorable statistics of primary results must be subject to considerable discount. Perhaps the fact that none of the little group of giant magnet cases, so far as I know, comes within the range of this observation has influenced my preference for this method whenever it is applicable.

THE OPERATIVE TREATMENT OF KERATOKONUS.

PROF. DR. GRUNERT. BREMEN, GERMANY.

During the past 5 years I have followed a new method of operative procedure in cases of Keratokonus treating 11 eyes of 8 patients in the same way. The elapsed time of cases has been sufficiently long to allow me to form a decisive opinion and to present to you my results, asking you to try it.

My starting point was Elschnig's method. Elschnig makes a streak with the galvanocautery from the limbus to the top of the cone. This induces vessel formation in the cornea, which increases the resistance of the greatly thinned corneal center. This method appeared to me above all others to be the best in its principle. Its effects, however, seemed to me insufficient. In some cases the vessel formation did not show at all, even after extensive cauterisation. Therefore I combined different measures into one procedure, which is performed in three stages and produces with certainty a flattening by means of a strong and well vascularized scar formation, leaving in the center only an insignificant opacity.

I first use an electrode with a flat tip beginning at the upper limbus is cauterized for a length of 2 to 3 m.m., the burn reaching into the parenchyma; then with the finest wire tip this line is extended into an equilateral triangle, one apex being continued as a fine line to the center of the cone. Two days later the chief operation is done under narcosis. The slough is scraped off, the cornea is split along the middle of the burned line from the center to the limbus. The central meridian of the cornea is then covered with a conjunctival bridge after Kuhnt's method. Four weeks later the flap is transplanted back.

I would like to mention the following details: The pupil must be contracted a minimum by Eserin before the beginning of the chief operation. After careful removal of the slough the conjunctival bridge is first formed, preferably from the external scleral conjunctiva. It should contain as little subconjunctival connective tissue as possible. It should be laid experimentally over the perpendicular meridian of the cornea, the sutures put in and tied to see, if it lies tense and covers at least a width of from 5-7 m.m. The sutures are then loosened, the flap put aside and the cornea slit. I pass the point of a Graefe's knife one m.m. below through the center of the cone, the sharp edge up, as in slitting an abscess, carry the knife point to the angle of the anterior chamber, elevate the

knife and slit exactly the middle of the burnt line up to the scleral border. After the aqueous humor has flowed off the cone collapses forming many small folds. The conjunctival flap is now laid over it and fixed with sutures. It lies loosely, with the anterior chamber opened and becomes tense only, when the chamber forms again. Later as it contracts its tension increases, and is exerted upon the cone. The patients are left in bed for 6-8 days with a double bandage. With each change of dressings Eserin or Pilocarpin is instilled.

When the sutures do not cut spontaneously they are removed on the sixth day. The lower part of the flap retrogrades slowly toward the side, as it lies on intact corneal epithelium. Four weeks after the chief operation I restore the conjunctival bridge to its original bed leaving the small portion that has become adherent to the denuded surface of the cornea. In some cases it had become atrophic, so that a transplantation appeared useless. It then was simply cut away. Four weeks later the part of the flap covering the burn not becoming atrophic, I remove or retransplant this piece also.

(Then follow the historiae morbi, which may be consulted in the original.)

I did not observe unfavorable circumstances, e. g., the iris never became enclosed in the wound. A deformity is not produced by the scar as the broader upper part is covered by the lid and the lower part is so small and thin that it does not appear prominent cosmetically. Against the earlier procedures ours has the great advantage, that the corneal center can be used optically, as the streaky perpendicular scar does not interfere materially more than the already present central opacity of the Keratokonus.

In closing I would like to point out the difficulty in many cases of correcting the refraction of the operated Keratokonus. The Astigmometer gives only approximate values on account of the always present irregular astigmatism. Only after often repeated and lasting subjective examination can one find the cylindrical correction that improves the vision.

HEREDITY IN RELATION TO THE EYE.*

GEORGE FRANKLIN LIBBY, M. D..

DENVER, COLORADO.

(Member of Colorado Ophthalmological Society, American Academy of Ophthalmology and Oto-Laryngology, and American Ophthalmological Society.)

A great and steadily increasing interest in the ocular effects of heredity has arisen in recent years, and much knowledge has been acquired by the collective work of many investigators of this hitherto neglected subject. Of all the patient and productive workers in this field Edward Nettleship is far in the lead. His investigations have included the following hereditary diseases: Cataract, retinitis pigmentosa, congenital stationary night blindness, hereditary optic atrophy, color blindness, glaucoma, iritis, chorioiditis, opacity of the cornea and nystagmus. Not only has he investigated personally many affected lines from two or three even to ten generations, but he has also tabulated the work of ophthalmologists the world over; thus giving the comprehensive observations and statistics upon which alone intelligent opinion may be founded as to this important factor in ophthalmic science.

The revival of interest in Mendel's rules on heredity and the application of them to the transmission of anomalies, deformities and diseases in man, have doubtless stimulated ophthalmologists to investigate along these lines in their own particular domain.

Congenital defects not traceable to the same or similar abnormality in the direct line, have not been included in the following summary of illustrative cases.

LIDS.

The writer has observed hereditary narrowing of the palpebral aperture of one eye as a family trait, extending for three or four generations. Other familial peculiarities may be noticed by careful observation of generations known in person or by study of family portraits or photographs.

Epicanthus. Double epicanthus running through two and three generations is fairly common. In each instance the development of the bridge of the nose corrected the deformity by or before adult life so that operation seemed inadvisable, in cases observed by the author.

Coloboma of the lid has been observed as an hereditary anomaly.

Ptosis. In a personal communication, Samuel Z. Shope has related a striking case of hereditary ptosis, affecting the right eye in

^{*}Thesis for the Degree: Doctor of Ophthalmology, University of Colorado.

five generations. One child only in a large childship was affected in each generation. A female showed this defect in the fourth generation of the affected line; males only being affected in the other generations.

H. R. Stilwill has mentioned to the writer a case of ptosis affecting a man, his daughter and her son.

Ectropion. Harry A. Smith has personally told the author of ectropion of both lower lids, occurring after forty years of age, which he had observed in a father and his seven sons.

CORNEA.

Family Degeneration of the Cornea. Buchanan (1) reported the case of a woman, aged thirty-six, showing this defect, and completed the previously noted histories of her two brothers, who had the same disease. One brother died of tuberculosis. The vision of the other gradually failed until he had to give up his occupation as an engine fireman. In the sister's eyes both corneas were similarly affected. The central area was distinctly hazy for a radius of about 2 m.m.; around this was a ring of dotted opacity 1.5 m.m., and beyond this a clear ring to the periphery. The corneal microscope showed the central haze to be made up of very small bluish-grey dots. The vision was 4/36 in each eye, the tension and pupils normal, and the health said to be good.

Folker (2) observed family degeneration of the cornea in three generations, eight cases ranging from twelve to ninety-two years of age. All the affected areas were nodular, and both eyes were involved in each case.

Komoto (3) noted a father, son, daughter and nephew, who were all born with diffuse, non-vascular corneal opacities of a bilateral character. The son and daughter had congenital cataract, also. Neither syphilis nor tuberculosis could be detected.

Lattice-Form Opacity. Freund (4) reported fifteen cases of lattice-form opacity of the cornea, occurring in two families, and running through at least four generations. The opacity appeared at or after puberty, reaching its full development between thirty and forty years. Both eyes were involved, but not to the same extent. The opacity was thickest at the center, with a clear periphery. Both the superficial and deep layers were affected; and a chalky deposit appeared in late stages. No constitutional disease was detected.

Interstitial Keratitis. This disease is usually considered as pathognomonic of inherited syphilis, although a small number of cases are due to acquired syphilis, and probably fewer still to inherited gout.

The writer had under his care a case of interstitial keratitis due to acquired syphilis, and following the primary infection by only nine months; and has reported cases due to hereditary taint. In one of these inherited cases the mother of the affected child took active and persistent anti-syphilitic treatment for three years preceding marriage, the last six months of pregnancy and the first three months of nursing her first child. When six and one-half weeks old this child had a skin eruption on each heel, which yielded to mercurial inunctions in two and one-half weeks. Snuffles were persistent for the first six months of the child's life. At four years of age double interstitial keratitis of a severe and distressing type developed. The corneal inflammation subsided in two months under the use of atropin and heat locally, and calomel and hydriodic acid internally. In two months more the opacities in the cornea disappeared under applications of yellow oxide of mercury ointment, alternated with dionin.

Parenchymatous keratitis is sometimes much modified in severity in the second eye affected; due, apparently, to active specific treatment during the first attack.

SCLERA.

Blue Sclerotics. Adair-Dighton (5) has reported blue sclerotics in nine persons, running through four generations, and transmitted through males only. Six out of eight children in the third generation had this condition; and the only member of the fourth generation yet born also showed it. Osteoporosis, as shown by frequent fractures, was generally manifested in these cases. It was thought that the blue color was due to thinning of the sclerotics.

Sydney Stephenson observed blue sclerotics affecting twenty-one of thirty-two members in four generations of a family of syphilitics. Harmon followed this genealogy further, finding thirty-one out of thirty-five showed some congenital peculiarity. Rolleston (6) reported a syphilitic mother who, with her male infant of five months, had blue sclerotics. Her sister and grandmother were likewise affected.

IRIS.

Aniridia. Report has been made by Hamilton (7) of a father and three sons who showed congenital absence of the iris. The mother was highly hyperopic, but her eyes were otherwise normal.

Hereditary Defect of Iris. Thye (7a) reported bilateral congenital defect of the anterior layer of the iris affecting father (aged 32 years) and son (aged 10 years) similarly, although the lesion was more extensive in the father's eyes. The other living

child, a girl, had normal eyes; but an infant that died at six months had the same anomaly as the father, according to the statement of the observing and credible parents. Both father and son were physically sound except as to their eyes. Both had horizontal nystagmus, and the son had alternating divergent squint also. The father showed operative aphakia in one eye, mature cataract in the other. The son presented punctate opacities in the left lens. The anterior layer was absent from about one half the surface of the father's irides, and about one-fourth of the son's. The pigment layer showed distinctly in this area; and in one spot in one eye of father and son the iris was entirely deficient, the lens opacity being seen through these openings. Both patients were decided blondes; and the gray-blue of the unaffected stroma made a sharp contrast to the brown, exposed pigment layer of the iris.

Thye also referred to Manz's case of hereditary bridge-coloboma affecting two generations.

LENS.

Cataract. Nettleship (8) has traced senile and juvenile cataract through one hundred sixty-seven families, three to six generations being affected; and has studied two hundred thirty eight cases of congenital cataract. In one family thirty members in four generations showed the defect. The transmission was direct, from one or both parents to offspring, rarely skipping a generation. In some families he noted a striking tendency for the cataract to appear at about the same age, generation after generation; but on the whole it appeared or ripened earlier in the later generations. In four out of ten families affected, the parents of children with complete congenital cataract were first cousins.

Nettleship and Ogilvie (9) have together collected twenty cases of congenital cataract among 150 members, in a family history covering seven generations. The time of appearance of the cataract ranged from 10 to 82 years. In every case the inheritance was direct, from parent to child.

Millikin (10) observed fourteen cases of hereditary cataract in three families. In two it was traced through three generations. In one family cataract developed during early childhood for three generations, being bilateral in each case.

Collomb (11) has reported zonular cataract in two, and probably three generations. In six children of the supposedly third generation one was slightly affected, while two showed pronounced cataract, and three were unaffected.

Manson (12) has recorded a case of hereditary lamellar cataract

occurring in four consecutive generations, affecting six males and seven females, and transmitted in all cases by affected females. Three members of the pedigree in different generations had a congenital deformity of the little fingers; but only one person showed both the digital and lenticular abnormality.

Posterior Polar Cataract. W. F. Matson has recently observed binocular posterior polar cataract affecting two daughters of a man who had experienced defective vision all his life, but without a history of traumatism or inflammatory disturbance. One of these daughters had no children: the other had two daughters and a son, both girls showing the mother's defect in each eye.

Hereditary Punctate Opacities. The writer has observed numerous peripheral punctate opacities in the outer fourth of the lens, of identical appearance, in a mother, aged thirty-seven, and her daughter of twenty years. Except for errors of refraction these eyes were not otherwise affected. Correcting lenses gave normal vision.

Ectopia Lentis. A. R. Gunn (13) reported seventeen out of twenty-two children, the offspring of an affected and unaffected parent in five families, all of whom showed bilateral and complete congenital dislocation of the lens, without coloboma of the uveal tract. The lens was well developed and clear in the three children examined, and floated in the vitreous. In three adults examined, small pupils and posterior synechia prevented a satisfactory inspection of the interior of the eye, but the absence of the lens was demonstrated.

G. G. Lewis (14) noted hereditary dislocation of the lens affecting sixteen persons in six successive generations.

Congenital Aphakia. Toufesco (15) has reported a case of congenital aphakia, and collected fifteen other cases previously recorded. Most of the cases showed other abnormalities of the eye. Toufesco expressed the belief that, as a rule, the absence of the lens was due to a process of degeneration and absorption of the previously formed lens, rather than a fault of embryonic development.

OPTIC NERVE.

Hereditary Optic Atrophy was first described by Leber (16) in 1871, and is called "Leber's Disease." It is an affection of the papillo-macular bundle of neurons, is evidenced by a central scotoma and ends in optic atrophy of varying degrees. Before Helmholtz invented the ophthalmoscope, in 1851, these cases were doubtless recorded as hereditary amblyopia or hereditary amaurosis.

In 1877 Leber added to his previously reported cases, collecting a total of fifty-five cases in sixteen families.

Behr (17) described an unusually early appearing bilateral optic atrophy which he classed as hereditary. It occurred in six cases, and all were boys, affected in early childhood. Other parts of the nervous system were involved.

Raymond and Koenig (18) have recorded four family groups of optic atrophy, and point out their medico-legal importance. They cite cases in which compensation was claimed and allowed for optic atrophy ascribed to slight injury or to retrobulbar neuritis due to exposure.

Hanke (19) had made a similar observation in the case of two brothers.

Batten (20) reported two cases in one family, together with a cousin. All were affected before twenty. The family history indicated transmission through healthy mothers, as is usual in this disease.

Twelve cases of optic atrophy in one family were traced by Hancock (21) through five generations. Six cases recovered good sight. Each affected person was a male, and the optic degeneration was transmitted through healthy daughters to grandsons of the affected male.

In 150 cases atrophy appeared between 6 and 67 years, the largest number occurring at about 20 years.

Arnold Knapp (22) observed eight cases in three generations, being discovered at six years of age. The disease was transmitted from the father to two sons and two daughters, and through one of these daughters to three of her sons.

In 1909 Nettleship (23) collected all published and many unpublished cases of this disease; in all 180 separate records with references.

RETINA.

Glioma. De Gouvea (24) recorded an instance of heredity in glioma. The father had the right eye removed when two years old, for glioma. This diagnosis was confirmed by the microscope. At twenty-one he married a woman whose family history was good in reference to neoplasms. They had seven children. Of the first two, both girls, one had glioma of the retina at five months, the other at two years. Another female child developed glioma at five months. The other four children escaped this form of malignant sarcoma.

Retinitis Pigmentosa. Of 488 families affected by this disease,

which is incurable and usually leads to practical blindness, Nettle-ship (25) found heredity without consanguinity in 230, consanguinity without heredity in 226, and both these factors figured in 32 affected families. It has not been proved that consanguinity can originate retinitis pigmentosa, as Liebrich thought, even though the offspring of cousins show it with striking frequency; but intermarriage does surely act as an intensifying cause by increasing an hereditary tendency. A family has been reported in which twenty males and eighteen females were affected by retinitis pigmentosa in seven generations. The disease has skipped even three generations and then reappeared with undiminished force.

Snell (26) has traced a family history of 67 descendants, 28 showing night blindness and other evidence of pigmentary degeneration of the retina; males and females being affected in about equal proportions. The disease affected five generations, skipping none. It was transmitted through both males and females, and consanguinity was not proven. Night blindness made its first manifestations in early childhood, and was complete at 40 years.

Aubineau (27) has reported three out of five of the children of second cousins affected by retinitis pigmentosa; and the case of two affected brothers, whose parents were first cousins. The averages of many observers who have collected data indicate that consanguinity is a factor in fully 25 per cent of all cases of retinitis pigmentosa.

Posey had under observation two generations of a family affected by retinitis pigmentosa, it is said, for two centuries. Posey and Sautter (28) have urged that consanguineous marriages should be discouraged by the profession and prohibited by law.

Nettleship has called attention to one type of heredity which affects the sexes in about the same proportion, and another in which the males only are affected but the disease in transmitted through the female line alone. He considers that consanguinity of parents emphasizes and even originates hereditary taint. It has also been noted by him that certain families seem subject to varying diseases of the eye, one member having glaucoma, another cataract, a third detachment of the retina or gouty inflammation; and that probably this sometimes indicated an hereditary imperfection of the whole eye, comparable with certain defects of the nervous system.

GENERAL HEREDITARY DISEASES.

Glaucoma. Nettleship (29) has suggested the probable disproportion in size between cornea, ciliary region and lens in inherited pri-

mary glaucoma. Three to five generations have been affected; the most extensive invasion being nine out of twenty-two persons in two generations. Anticipation, i. e., the tendency for the disease to appear at an earlier age in succeeding generations, is very marked in some of the cases of glaucoma where heredity can be proved. The child may have both compensatory myopia and glaucoma.

Ametropia and Squint. Myopia, hyperopia and astigmatism are apparently hereditary defects. Myopia in one parent may be overcome by hyperopia in the other. A case comes to the writer's mind of eight diopters of myopia in the mother being counteracted, as an hereditary influence, by emmetropia or hyperopia in the father's line, so that the four children of these parents were emmetropic. Fleischer (30) found, in a German village where myopia was especially common, that fifty per cent of the children in seventeen families in which one parent was highly myopic, developed myopia. In another family in which both parents were myopic, all the children manifested the same error. The parents of eighty families in this village had normal eyes in each instance, as did their offspring.

Different authorities have variously estimated squint to be hereditary in from 33 to 70 per cent of all cases. Heredity is especially

marked in convergent strabismus.

Von Sicherer (31) traced squint through four generations of one family.

Based on ophthalmometric measurements in a large number of children and one or more near relatives, Steiger (32) found corneal astigmatism inherited from one or the other parent in a large proportion of cases.

Crzellitzer (33) analyzed 330 families affected with more than 6 dioptres of myopia. Male and female members appeared to be equally involved as to the hereditary factor. In 30 per cent of the cases there was myopia of both parents, in 20 per cent of the father alone, and in 17 per cent of the mother alone. Transmissibility of myopia seemed to diminish in later children.

Bogatch (34) has reported three generations of a family of thirtyeight members. Eleven had high myopia; some with retinal detachment. In all the high myopia developed in early youth, with early blindness in some cases. Consanguinity was apparently a factor, as the grandparents and parents of the most affected children were cousins. There was also an hereditary predisposition to myopia from diminished resistance of the sclera at the posterior pole of the eye. Ophthalmoplegia. Bradburne (35) has traced this rare affection through five generations. He found ptosis, accompanied by an almost complete loss of ocular movements.

Huetlemann (36) published his observations on congenital ptosis, with epicanthus, in three generations. Eight children out of eleven were affected. In only one case was there disturbance of other ocular muscles. The electric current showed absence or imperfect development of the levator.

Nystagmus. Clarke (37) has noted this disease extending through five generations, affecting 23 persons, all males. In each generation none of the daughters were affected; and only the eldest daughter transmitted the defect, and she to her sons only.

Radloff (38) described a new family group of miners' nystagmus, which is characterized by very regular undulatory oscillations, varying from 180 to 240 per minute. Vestibular nystagmus, on the contrary, is of the jerking type.

From thirteen pedigrees of hereditary nystagmus Nettleship (39) discovered that in those showing both eye and head movements the abnormality affected both sexes, and could be transmitted by either male or female parent; whereas, in the genealogies showing eve movements alone, the abnormality was strictly limited to males and transmitted only by unaffected mothers.

Amaurotic Family Idiocy. R. M. Smith (40) has reported two cases occurring, as usual, in Hebrews. The characteristic symptoms are a mahogany red spot on a white background in the macular region, decreasing vision, progressive paralysis, mental deficiency going on to idiocy, nystagmus and drooling. All die before three years of age.

Sheffield (41) has recorded the case of a Hebrew child of eleven months. It developed well the first six months; when it gradually became pale, flabby, less active physically and mentally, and developed the characteristic fundus changes, with blindness and idiocy. The child died of grippe and pneumonia. An older brother and sister were normal.

Hereditary Blindness. Clarence Loeb (42) has reported a family in which every member for five generations was affected with cataract, and also six families, headed by blind parents, in which seventeen out of thirty-one children were blind. He thinks ten per cent of blindness may be hereditary. In optic atrophy he noted a marked tendency to transmission through a healthy mother to a blind child. It is his opinion, and that of a large number of ophthalmologists to whom he addressed inquiries on this subject,

that the marriage of a person afflicted with hereditary blindness should be advised against and, if possible, legally prevented.

The United States census of 1900 showed that 56,507 inhabitants were blind. Of this number 2,527 were the children of cousins. Bemis traced 823 marriages of cousins, finding 85 blind (over 10 per cent), and 145 deaf mutes.

Color Blindness has been frequently traced as an hereditary influence.

Congenital Stationary Night Blindness. This striking affection has been traced by Nettleship (43) for 270 years in the Nougaret family, of Southern France. Out of a genealogy of 2,121 members, 6.36 per cent were affected. The disease shows no pigmentary or other retinal changes. The general health is good and longevity is noticeable. Invariably this condition is transmitted directly from night blind parent or parents to offspring. The tendency to night blindness is emphasized by frequent intermarriage.

Sinclair has collected even cases in a family of forty members, the disease affecting four successive generations.

Nettleship (44) has also reported twenty cases of congenital night blindness in which this condition was associated with myopia, and descended through normal females.

Langdon (45) has reported a family of five in which the father and one daughter were affected by more or less helplessness in dim light. Corrected vision was 6/5, the fundi were of healthy appearance, and the fields were normal for form and color in a good light, with concentric contraction in diminished illumination. Henry's photometer showed the daughter's light sense to be R. 3/5 and L. 2/5, while the father's was 3/5 in each eye.

Bordley (46) has noted congenital night blindness in a group of cases traced to five generations. It was associated with defect of the lower temporal quadrant of each visual field. There was progressive concentric contraction of the fields, which were greatly narrowed by diminished illumination. Death occurred in middle life, about one year after total blindness became established.

Congenital Word Blindness. This defect, which is cerebral rather than ocular, has been traced by Stephenson through three generations. Hinshelwood reported four cases and pointed out in 1907, that children with this defect never get a fair chance in public schools, but do very well with private instruction, when not subject to ridicule for their great backwardness in learning to read. In all respects but retention of the visual impression of words, the mentality is normal. Four years later Hinshelwood

(47) reported two cases occurring in the second generation of that same family. One of these cases showed defective visual memory for both words and figures; though this investigator has shown, from his study of cases of acquired word blindness that the visual memory for words and letters is completely independent of that for figures. All of Hinshelwood's many cases of congenital word blindness have ultimately been taught to read; showing that none were defective as to general intelligence.

Albinism. Lagleyze (48) found 27 cases of albinism, mostly among people in an isolated province in the Argentine Republic, where intermarriage had been practiced to an extraordinary extent for nearly a century. These 27 cases occured in 13 families; and 5 of these families produced 13 cases in children of first cousins, or of uncle and niece. Lagleyze considers that consanguineous marriages are even more of a factor than heredity in causing albinism, and that a parent with partial albinism may have offspring showing complete albinism. In this way hereditary deficiency of pigmentation is intensified.

Cryptophthalmos. Coover (49) has reported a mother and child with bilateral congenital cryptophthalmos. Since that report another child has been born with the same anomaly. The father and four grandparents of these two children showed no such defects.

Inheritance of Acquired Ocular Defects. This question is of interest, even though it has not passed the speculative stage. Tobias (50) has recorded the instance of a mother with bilateral operative colobomata of the iris who gave birth to five children, the two youngest showing congenital coloboma of iris and choroid. The eyes of the other children were normal. The operation on the mother had occurred four years before her marriage. In her right eye the coloboma was below and in, in the left, up and in. One child had bilateral coloboma below, the other showed a coloboma of iris and choroid down and in. Failure of the fetal cleft to close may have caused the congenital colobomata, rather than direct inheritance of the results of surgical interference.

More cases could be related along the lines considered, and even different manifestations outlined. But the part that heredity plays in the transmission of ocular disease seems already proved and sufficiently illustrated. It becomes, therefore, the duty of physicians in general and ophthalmologists in particular, to use their utmost endeavor to discourage the marriage of a person or per-

sons afflicted with hereditary ocular disease, and if possible to secure the legal prohibition of such alliances.

530 Met. Bldg.

BIBLIOGRAPHY.

- Leslie Buchanan. Note on Family Degeneration of the Cornea. Ophthalmoscope, Oct., 1911, page 693.
- 2. H. H. Folker. Nodular Opacity of the Cornea in Three Generations. Trans. Ophthal. Soc. of United Kingdom, Vol. XXIX, page 42.
- Komoto. Congenital Hereditary Opacity of the Cornea. Klin. Monatsbl. f. Augenheilk., Oct., 1909, page 445.
- 4. H. Freund. Lattice-Form Opacity of the Cornea. Graefe's Archiv. f. Ophthal., Vol. LVII, part 2.
- Adair-Dighton. Blue Sclerotics. Ophthalmoscope, April, 1912, page 188.
- 6. J. D. Rolleston. Brit. Jour. of Children's Diseases, May, 1911.
- 7. T. K. Hamilton. Family Irideremia. Ophthalmoscope, May, 1903.
- A. Thye. Manz-Sattler Festschrift, Klin. Monats. f. Augenheilk., 1903, part 2, page 374.
- 8. E. Nettleship. Heredity in Various Forms of Cataract. Roy. London Ophthal. Hosp. Reports, Vol. XVI, part 3.
- E. Nettleship and F. M. Ogilvie. Peculiar Form of Hereditary Congenital Cataract. Trans. Ophthal. Soc. of United Kingdom, Vol. XXVI.
- B. L. Millikin. Hereditary Element in Cataract. Amer. Jour. of Ophthal., March, 1903.
- 11. A. Collomb Archiv. d'Ophtal., Vol. XXXI, page 549.
- 12. J. S. Manson. Ophthalmic Record, Feb., 1912, page 105.
- A. R. Gunn. Complete Congenital Dislocation of the Lens: A Family History. Ophthalmoscope, April, 1912, page 193.
- G. G. Lewis. Hereditary Ectopia Lentis. Archiv. of Ophthal., May, 1904.
- 15. S. Toufesco. Congenital Aphakia. Ann. d'Oculist., Aug., 1904.
- 16. T. Leber. Graefe-Saemisch Handbuch, Band. V.
- C. Behr. Complicated Hereditary Family Optic Atrophy of Childhood. Klin. Monatsbl. f. Augenheilk., Aug., 1909, page 138.
- Raymond and E. Koenig. Hereditary Atrophy of the Optic Papilla. Rec. d'Ophtal., 1909, page 65.
- V. Hanke. Hereditary Optic Atrophy of Forensic Interest. Klin. Monatsbl. f. Augenheilk., June, 1903.
- 20. R. D. Batten. Hereditary Optic Atrophy; Recovery. Trans. Ophthal. Soc. of United Kingdom, Vol. XXIX, page 144.
- 21. W. I. Hancock. Royal London Ophthal. Hosp. Reports, Vol. XVII.
- A. Knapp. Hereditary Optic Atrophy. Archiv. of Ophthal., July, 1903.
- 23. E. Nettleship. On Some Hereditary Diseases of the Eye. Trans. Ophthal. Soc. of United Kingdom, Vol. XXIX.
- 24. H. De Gouvea. Hereditary Retinal Glioma. Annal. d'Oculist., Vol. CXLIII, page 32.

- E. Nettleship. Retinitis Pigmentosa. Roy. London Ophthal. Hosp. Reports, Vol. XVII, part 1.
- S. Snell. Retinitis Pigmentosa in Five Generations. Ophthalmic Review, Jan., 1903.
- 27. Aubineau. Retinitis Pigmentosa. Annal. d'Oculist., June, 1903.
- W. C. Posey and A. C. Sautter. Ophthalmological Dangers of Consanguineous Marriages. Ophthalmic Record, Dec., 1908, page 682.
- E. Nettleship. Some Hereditary Diseases of the Eye. Ophthalmoscope, Sept. and Oct., 1906.
- Fleischer. Hereditary Myopia. Trans. of 34th Ophthal. Congress of Heidelberg.
- O. von Sicherer, Convergent Strabismus, Muench, Med. Wochenschr., Vol. LIV, 24-25.
- Steiger. Influence of Heredity on Corneal Curvature. Zeitschr. f. Augenheilk., April-May, 1906.
- Crzellitzer. Transmissibility of Hereditary Ocular Affections. Soziale Hyg. und Med., Nos. 14-15.
- 34. G. Bogatch. Klin. Monats. f. Augenheilk., Oct., 1911, page 431.
- 35. A. A. Bradburne. Hereditary Ophthalmoplegia. Archiv. of Ophthal., May, 1912, page 287.
- 36. Huetlemann. Graefe's Archiv. f. Ophthal., Vol. LXXX, part 2.
- 37. E. Clarke. Hereditary Nystagmus. Ophthalmoscope, Sept., 1903.
- 38. Radloff. Family Nystagmus. Klin. Monats. f. Augenheilk., May, 1910, page 276.
- E. Nettleship. Hereditary Nystagmus. Report of Ophthal. Soc. of U. K., Archiv. of Ophthal., July, 1911, page 415.
- R. M. Smith. Amaurotic Family Idiocy. Boston Med. and Surg. Jour., March 7, 1912, page 370.
- H. B. Sheffield. Amaurotic Family Idiocy. New York Med. Record, Jan. 27, 1912, page 165.
- 42. C. Loeb. Hereditary Blindness. Trans. Amer. Acad. of Ophthal. and Oto-Lar., 1908.
- 43. E. Nettleship. Congenital Stationary Night Blindness in Nine Successive Generations. Trans. Oph. Soc. of Unit. King., Vol. XXVII, page 269.
- 44. E. Nettleship. Hereditary Night Blindness. Ophthalmic Record, Feb., 1912, page 106.
- H. M. Langdon. Congenital Night Blindness. Report of Sect. on Ophthal., Coll. of Physicians, Ophthal. Rec., May, 1912, page 200.
- J. Bordley, Jr. A Family of Hemeralopes. Johns Hopkins Hosp. Bull., Vol. XIX, No. 210.
- 47. J. Hinshelwood. Brit. Med. Jour., March 18, 1911.
- 48. Lagleyze. The Albino Eye. Archiv. d'Ophtal., May-June-July, 1906.
- D. H. Coover. Cryptophthalmia, with Report of Two Cases. Jour Amer. Med. Asso., July 30, 1910, page 370.
- Tobias. Inheritance of Acquired Ocular Defects. Klin. Monatsbl. f. Augenheilk., April, 1911.

ROENTGENOGRAPHY OF FOREIGN BODIES IN THE EYEBALL.

G. H. STOVER, M. D., DENVER, COLORADO.

While the eye is not a vital organ, it may be said that it is almost a vitally important one. So precious a thing is the sight of an eye that in the effort to preserve it when endangered by injury or disease, the minutest attention to detail cannot be too trivial, and no effort can be too great. In the case of foreign bodies in this organ the value of the Roentgen ray as a means of diagnosis and localization, and as a guide to treatment to be pursued, can hardly be over-estimated.

Aside from the occasional accidents to which any of us are liable, there are a number of trades and occupations in which there is an especial hazard to the eye, principally those in which forcible blows of a metallic instrument upon other metallic objects are required. In this connection ought to be mentioned the fact that the cheaper grades of hammers are a source of danger, as they chip easily. In mining, many accidents to the eye result from unexpected explosions in blasting, or from the unlooked for explosions of detonating caps.

In the days previous to the discovery of the Roentgen ray, the entrance of a foreign body into the eyeball meant a prompt removal of the organ in case the sideroscope or magnet failed to reveal and remove a piece of iron, or the ophthalmoscope to reveal the presence and location of substance of some other class of matter.

The loss of an eyeball from what seems to be a trivial injury or indeed from any injury, is not contemplated with equanimity by the unfortunate subject.

Now, since the vast majority of the substances which enter the cycball can be discovered and localized by means of the Roentgen ray, it is possible in many cases to remove them without sacrificing the eyeball, or even without loss of vision, in the absence, of course, of great structural damage to the organ, or of destructive complications.

The Roentgen ray will reveal the presence of any foreign body more dense than the surrounding tissues. The usual foreign bodies found are fragments of iron, steel, brass, lead, quartz, copper, sand and glass. I have found experimentally that even the thin glass of which incandescent electric lamps are made will show in a properly made skiagram of the eyeball.

^{*}Lecture given during Post-Graduate Ophthalmological Course, University of Colorado Med. School, 1912.

The mere discovery of the fact of the presence of a foreign body in the eyeball is important, but it is not enough for our requirements; it must be accurately localized in order that an attempt to remove it may be made. The clinical appearances in some cases of foreign body in the eyeball may be very deceptive. The fact that there is a wound of the conjunctiva is far from being evidence that such has penetrated the sclera.

Sometimes more than the safety of the eye and the sight of the patient depends upon the accuracy of the skiagram in such cases as these. I remember the case of an Italian into whose eyeball a foreign body had penetrated; medical aid had not been sought soon enough, and the eveball was in a condition rendering immediate removal imperative; the "king" of the colony and a retinue of husky adherents insisted upon being present while the consultation of oculists was being held. They laid much more strees upon the presence or absence of a foreign body as the foundation for treatment than upon the degenerated condition of the organ itself. When the Roentgenographic examination revealed a foreign body which could be demonstrated to them upon the plates, consent was given by the patient and his advisers to an operation; during the operation the "king" and his retinue were present and it was quite evident that they were not happy about the matter; no sooner had the eyeball been removed than they somewhat ominously said, "Yow cut open; we want see." The jagged little piece of metal was found in situ, very much to the relief of the operator and his colleagues, whose situation would have become very unpleasant if it had not been found.

The Roentgenographic localization must be done with mathematical exactness: there are several methods for the accomplishment of this purpose; in one of them small lead markers are fastened to the eyelids in order that the location of the foreign body may be computed by measurements in connection with the position of the shadows of the markers on the plates. I have not made use of this for the reason that I believe the markers might change their position relative to the foreign body on account of fatigue of the lid muscles. Another method makes use of a fine wire cage which is placed in contact with the conjunctiva. I believe that this method, which I have never felt like using, presents grave technical difficulties. The method I have always used, and which I believe to be free from many of the errors inherent in the others, is the remarkably ingenious method devised by Dr. Sweet. While at the first glance this method appears to be somewhat complicated, it

is really not greatly so; it requires a painstaking accuracy in technique, but that does not mean complication by any means.

I place the patient in a high-backed chair with the injured eye farthest from the tube, and apply the localizer. The corneal center ball is adjusted while my assistant pins a piece of white paper to the wall in such a position that while the patient looks at it, the corneal pointer is in the horizontal plane of the eyeball. To measure the distance of the corneal center ball from the cornea I make use of a ruling pen with the points well separated, much as one would use a pair of compasses for the purpose, but the fine screw which brings together or separates the two legs forming the ruling pen gives me quickly a much finer adjustment than I could obtain with the compasses. The patient's head is held by sand bags and he is strictly impressed that he must not move his head the smallest fraction of an inch until I tell him to get up out of the chair or I will have to make another complete examination; this makes him think that a movement of the head will mean a double fee and a cannon shot would not budge him. He is told that he also must look at the piece of paper all the time, and I repeat this instruction every few seconds during the examination, my assistant meanwhile watching his eyes. The two exposures are then made, moving the tube properly for the second one, the plates are developed, fixed, washed and quickly dried with alcohol after hardening them in formalin solution. In making the measurements for the localization I place the plate in'a frame which holds it at an angle of about forty-five degrees with the base of the frame; on the base of the frame is a sheet of white paper for the purpose of reflecting light up through the negative.

An interesting case, and one showing conclusively the value of Roentgenography, is that of C. R. No. 1474, referred by the late Dr. E. W. Stevens. The young man had been shot by one of a gang of rowdies, and a bird-shot had wounded the eyeball; the Roentgenogram showed the pellet to be behind the eyeball and entirely outside of it, evidently having completely traversed it. No operative interference. This was in 1904, and for a long time the young man has had practically normal vision in this eye.

M. F. No. 2710, referred by Dr. Enos. This boy was accidentally shot by a farm hand, whose shotgun was pointed at the ground; some of the shot rebounded and one of them penetrated the upper lid above the line of the conjunctival fold; there were clinical signs of trauma of the eyeball, but it was not known if the shot had really entered it. The Roentgenogram' showed the shot to be retained in

the tissues of the upper lid, from which situation it was removad. Recovery was prompt and uneventful.

Illustrative of the accuracy with which measurements are made by this method is a case reported by Dr. Edw. Jackson. After making his incision at a point determined by my examination by the Sweet method, he found that the magnet would not pull out the foreign body. He then introduced a fine pair of scissors to the depth and in the direction indicated, then clipped out an area corresponding to the size of the foreign body as computed from the Roentgenograms, touched his magnet to the scissors and withdrew the minute object.

You gentlemen would not wear a glass prescribed by an unskilled refractionist. Be at least equally as careful in selecting the Roentgenologist who is to perform the delicate task of localizing a foreign body in the eyeball of your patient. Several eyes have been removed after unsuccessful attempts at extraction of a foreign body, said to be in the eyeball according to the examination of an unskilled user of the X-Ray (in Denver) and examination of the ablated organ showed that there was no foreign body in it.

1443 Glenarm Pl.

COLORED GLASSES FOR HUNTING AND AS A PROTECTION AGAINST SNOW AND OTHER LIGHT.

SANITÄTSRAT DR. FRITZ SCHANZ,
DRESDEN, GERMANY.
(Translated by E. E. Blaauw, Buffalo.)

Many observe at the opening of the hunting season that their eyes have changed and that they need spectacles. They are insufficient for those, that became too much hypermetropic. With the mirror visor (described in Schuss und Schrot, Mitteilungen der Deutschen Versuchs-anstalt für Handfeuerwaffen in Berlin-Halensee, 1912), they can shoot as in youth. Colored glasses are recommended for those who can be helped with spectacles.

Hunters have found empirically that glasses of a certain color relieve them. Yellow, brown and yellow-greenish glasses have been found the most satisfactory for shooting. However these glasses diminish the amount of light, which penetrates the eye. An explanation has often been sought for, and is the opinion of some, that monochromatic light makes the horizon more distinct and lessens the chromatic aberration of the eye. All of these glasses on more careful examination discloses the fact that all are not monochromatics—this fact ought also to be found with differently colored glasses, f. i., the blue. However they have never been used for such, although they are very much desired as protectors. I hope to be able to give the explanation why glasses of a certain color are valuable for hunters:

Light refracted by a prism produces a spectrum on the screen. The spectrum shows a larger extension on a photographic plate or fluorescent screen. This demonstrates, that the light contains rays invisible to the eye—demonstrable by the fluorescopic screen and photographic plate. They lay beyond the violet rays, are therefore called ultraviolet. They play an active role in nature and are not used for the act of seeing; they are a pollution of the light for the eye. They are able to produce serious ocular inflammation of the skin of the face in high altitudes, the "Gletscherbrand," and of the eye, the snow blindness. The same inflamations are produced through intensive action of artificial light, known as electric ophthalmia. With less intense action it is difficult to separate their action from that of the visible rays, although we know there are three different kinds of disturbances of

vision from them, when they do not surpass in intensity the physiological limit.

On the last meeting of the Ophthalmological Society at Heidelberg I demonstrated how such rays, which are invisible, can be made directly visible and influence the vision unfavorably. The backwall of a case contains a mirror, the sidewalls a dark blue glass plate. If one looks in this case as in a stereoscope and directs the diffuse daylight on the eye through the blue glass one sees his own pupils gray. The eye appears as if a ripe cataract were present.

The explanation of this experiment is as follows: The lens of the eye fluoresces through the action of the more refractible, invisible rays of the diffuse daylight. Still more beautiful the experiment becomes, when sunlight or the light of an arclamp illumines directly the eye through the blue glass plate. The fluorescent light of the lens goes partly outward and is visible in the mirror, partly it reaches the retina. The retina also fluoresces in the same way, but this light does not leave the eye. This fluorescent light stimulates indirectly the elements sensitive to light, it exhausts the visual substances of the retina. Intense action produces a shine, which covers the sight.

Still a large part of the invisible rays, without being transformed in fluorescent light, reaches the retina. What is the action of these rays? We know from Birch-Hirschfeld that they produce anatomically demonstrable changes in the retina after very intense action, especially in the nuclear layer. Lately Behr (v. Graefe's Archiv. Bd. 82, Hft. 3) demonstrated that these rays are capable of diminishing materially the dark perception of the retina. The perception of small light stimuli increases very much, when we exclude these rays from our eyes. An eye, from which the invisible rays are excluded during the day, will see better in twilight.

Birch-Hirschfeld also observed disturbances of the color sense in patients, who had worked continually in the light of the mercury-vapor-lamp. The rays, which produce these disturbances, are not wanting in daylight. They are not at all without action even when they are not present in the same intensity.

We have, therefore, 3 actions of the not directly visible rays, which have an injurious effect on the visual act with intensities, which lay within the physiological limits. These are not the only disturbing factors, which emanate from these rays. They are contained in the idea of "Blendungs" phenomena, which are chiefly due to the visible rays. We can at present only incompletely limit these disturbances from each other. In any case the non-directly

visible rays play here a more important role than has been accepted up to now. These non-directly visible rays contain blue, violet and more especially ultraviolet rays.

If, knowing these facts, one examines the glasses, which the hunter has found empirically the best, one finds that these glasses absorb just these directly non-visible rays. The blue glasses, which allow these disturbing rays to pass, are rejected by the hunter. The glasses the hunter has found empirically the most satisfactorily possess other important defects on exact examination. They only absorb these rays partly or when they absorb completely, the loss of visible rays is very pronounced. It was therefore important to make a glass, which absorbs these invisible rays completely at the same time weakening the visible rays as little as possible. This glass is known as Euphos glass. For hunting purposes Euphoslight A is the best.

This glass is the most appropriate for water, automobile and air sport, and for those persons, who are much exposed to direct sunlight. Euphoslight B is recommended for snow spectacles for excursions in high altitudes. This glass is also very recommendable for men who work constantly in intense light. These glasses proved very efficacious for glass blowers whose eyes are often subject to cataract formation caused by these invisible rays. Men, who regulate electric arclight, etc., need additional assistance to soften also the visible light. This is done with the Euphosgray glass, which can be had in different shades.

Euphos glasses have proved most satisfactory in praxis: Stabsarzt Dr. Flemming, assistant of the Charité eye clinic, who went higher than 8,000 M. in a balloon, used on that occasion light Euphos glasses, while his companion used ordinary smoked glasses. He remained free from the disturbances, which we classify as snow blindness, while his companion became afflicted in the typical way.

The Euphos glasses have also been used in the South Polar expedition. Roald Amundsen wrote to me: "It gives me great pleasure to be able to report that the snow glasses, which you sent for my expedition, have been used with the best results. Helmer Hansen and myself used them during all the time going toward the South Pole and did not show a sign of snow blindness, while my other companions, who often used other glasses, have been all more or less blinded by the snow." The South Pole discoverer used Euphos B glasses. The loss of light is about 5-7 per cent more than that of the other transparent glasses. With the dark glasses, one

often sees on the tourist in high altitudes, much of the pleasure of nature is lost by this exaggerated shading off of the light!

The light of our intense artificial light sources contains more of these invisible rays than the daylight. It contains light of still smaller wave lengths. These do not reach the retina acting only on the anterior parts of the eye. They produce the disagreeable sensations, which we observe in our eyes with "Blendung" and fatigue. For artificial light we do not need spectacles, here we can better surround the sources of light with globe cylinders made of Euphos glass.

VISUAL SYMPTOMS OF ACCESSORY SINUS DISEASE.

PERCY FRIDENBERG, M. D., NEW YORK.

(Read before the American Academy of Ophthalmology and Oto-Larngology, Niagara Falls, August 20th, 1912)

The complicated system of air spaces in the facial skeleton almost completely encircling the orbit forms a borderland which has been cultivated assiduously and without antagonism by representatives of two specialities, who have found here honor, and incidentally trouble, enough for all.

In many cases of ocular or cerebral involvement the orbital route to the accessory sinuses and to the cranial cavity is the only surgically logical one whether followed by the ophthalmic surgeon or by the rhinologist under his direction or with his coöperation. In the diagnosis of accessory sinus disease the ophthalmologist has a serious responsibility. Many symptoms of progressive sinusitis and almost all, of serious complications are ocular or orbital. On the other hand, careful special tests of visual function and the detection of a central scotoma or of anomalies in the neighborhood of Mariotte's blind spot may establish a diagnosis of accessory sinus disease before nasal symptoms have become sufficiently marked to attract attention. In many cases the oculist is the one first consulted on account of failing sight, obscure visual symptoms, scintillating scotoma, hemicrania, headache, asthenopia, or for treatment of inflammation of one or the other tissues of the eye, any or all of which may actually be due to suppuration in the accessory sinuses. It is his responsibility to recognize the ocular symptoms characteristic of such affections, and, conversely, to appreciate the importance of a thorough rhinological examination in obscure eye cases. This is the more important as actual nasal discharge or obstruction may be absent. The closed empyemas and mucoceles being by no means devoid of danger to eye and brain, a superficial inspection of the nasal passages may lead to an unwarranted sense of security in this regard, and so be worse than useless. A free discharge of pus is not only a signal but often a safety valve as well, and tumors or caries and necrosis of syphilitic or tubercular origin may be as ominous for the integrity of the eye and brain as actual suppuration. In most cases it will be the province of the ophthalmologist to determine the presence of functional or organic ocular disturbances significant of accessory sinus origin, and for

his rhinological confrere to decide by examination or exploratory operation the extent, character and gravity of the disease process in the accessory cavities. This by no means implies that the ophthalmic surgeon should not be prepared to perform whatever surgical procedures are required for the relief of ocular or orbital complications, nor does it suggest that the rhinologist may not well learn to apply the special tests for those visual functions which are notoriously most frequently disturbed in disease of the nose and neighboring air spaces.

Ocular indications of inflammation in adjoining cavities include objective signs as well as subjective symptoms or abnormal reactions to special tests of the visual field, fixation field, color and light sense, and so on. Besides this, we must consider the possibility of certain functional neuroses such as photopsia, attacks of migraine, vertigo, and ocular headache being dependent in the last instance on accessory sinus disease and only secondarily to involvement of the eye.

Commensurate with the multiplicity of channels for blood and lymph, as well as for nerve supply leading to the eye socket from the neighboring sinuses, and proportional to the extensive topographic relation of the orbit to its accessory cavities we find a wealth of symptoms and signs ranging from a transitory puffiness of the lids, slight but persistent lachrymation, or conjunctival hyperesthesia to marked protrusion and immobility of an inflamed and sightless globe with every evidence of orbital abscess or panophthalmitis; from a relative central scotoma or enlargement of the blind spot, which neither patient nor physician has suspected, to a sudden and almost complete blindness with the picture of retinal thrombosis.

A survey of the symptomatology can be clear and complete only if we have some definite basis of study or standard of arrangement of these data. From the oculist's standpoint the most practical way would be to consider in their order, first, local signs of inflammation, such as edema, disturbances of position or motility of the globe, local pain and tenderness, and then the functional disturbances of vision for form, light and color, with their respective significance for the diagnosis of accessory sinus disease. From the clinical and diagnostic point of view we must also consider the various types of sinus disease, acute and chronic, and examine the sinuses separately for a special symptomatology as indicated by ocular involvement characteristic of each, whether mild or grave, subjective or objective. A combination of these two principles would seem to offer the best results for a complete study.

While certain symptoms or a complex are almost pathognomonic of accessory sinus disease involving the eye and may thus establish a diagnosis with little difficulty, the possibility of an etiological factor in the accessory sinuses must be granted for a wide range of ocular inflammations. In the absence of a distinct etiology the expert examination of these structures is imperative not only for the individual case but for the progress of our clinical knowledge.

PATHOGENESIS OF OCULAR COMPLICATIONS.

Among the more evident agencies we have to deal with nerve irritation either in the form of reflexes or from direct action of toxic substances, mechanical pressure or hyperemia from vascular involvement. Among the superficial reflexes, which may be motor, sensory or secretory, we need but refer in passing to lachrymation, clonic or tonic spasm of the lids, fleeting edema in the same locality (independent of inflammatory processes), transient conjunctival or scleral injection, meiosis, indicating hyperexcitability of the iris, and occasionally, spasm of accommodation which cannot be explained by the usual reflex factors or by refraction error. Among the secretory neuroses we note transient rise of intraocular tension with prodromata, or actual pronounced glaucoma in an acute attack or with continued high tension disappearing promptly under treatment of the accessory sinus involvement. It is possible that vitreous dust and some lenticular opacities and changes may well be due to disturbed nutrition of the chorioid dependent on longcontinued reflex irritation, although here the factors of toxic inflammation and of chemotactic action probably play a more important role. Sensory neuroses causing fleeting or more or less continuous pain in and about the eveball, radiating to temple, brow and occiput, and often of an exquisitely hemicranic type, have been reported in cases where inflammatory conditions of the orbit, the general and immediate cause, could with certainty be excluded. The symtom complex of asthenopia, whether accommodative, conjunctival, muscular, or retinal, is not infrequently found in cases of long standing accessory sinus disease, and careful rhinological examination is imperative in every case of this nature in which the condition of the refraction and of ocular balance is not such as to explain the symptoms or in which their correction fails to give immediate relief.

MacWhinnie has observed one sinus case in a young man 21 years of age, with compound myopic astigmatism, increasing 1 full D. in 8 weeks. Ophthalmic migraine or hemicrania occurring as a typical one-sided headache, often preceded by fleeting disturbances

of vision such as dazzling, a cloud before the eye (generally to one side), a complex known as scintillating scotoma, or fugacious amaurosis, is noted again and again in the case histories of patients with disease of the accessory sinuses, notably the posterior ethmoid and sphenoid cells, but not infrequently in frontal sinus involvement. This condition, too, although frequently due to pure eyestrain, should always arouse suspicion and lead to careful examination of the nose, unless its primary ocular origin has been proven.

Disturbances of central vision and of the visual field for white or color can hardly be explained on the basis of reflex irritation and give evidence of direct optic nerve involvement on a mechanical, vascular, or toxic basis. In 22 cases MacWhinnie (N. Y. Med. Journal, Aug., 1910), has been able to demonstrate a paracentral scotoma, usually relative. Motor disturbances manifesting themselves as limitation of the ocular excursions or revealed by diplopia, are generally an indication of mechanical interference by dislocation of adjacent structures, such as a bulging accessory sinus wall, in mucocele, empyema, and so on, or of inflammatory exudate, cellulitis, or pus in the orbit, which may directly involve the paretic muscle or by displacement of the globe lead to a condition which indirectly produces the same result. Pure nerve palsies are rare, although affection of one or other branch of the oculomotor nerve has been observed in cases where the agencies just mentioned were absent.

Nerve irritation may travel on a path which traverses one or the other sinus, while the exciting cause may be at a distance; thus carious teeth, especially those whose roots project free into the antrum, furuncles or erysipelatous inflammation about the alae nasi, nasal polypi (themselves a frequent sign of accessory sinus discase), or simple obstruction due to turbinate hypertrophy, as well as inflammations of the lachrymo-nasal passages and tear sac, are frequent causes of reflex ocular, particularly conjunctival and accommodative, irritation.

Disturbances of vision may, of course, be due to disease of any of the ocular structures, to a conjunctivitis, to corneal, lenticular, or vitreous opacities, to choroiditis, to retinal hemorrhage or detachment, all of which, in turn, may depend, in the last instance, on disturbances of nutrition or actual inflammation due to suppuration in the cavities bordering on the orbit. Those disturbances will be considered in a review of the disease of the various ocular tunics. The affections of the optic nerve deserve a more detailed consideration on account of their grave nature in reference to vision and their very evident dependence, as shown clinically

and pathologically, as well as by the results of operative and other treatment, on accessory sinus suppuration. The involvement of the optic nerve and secondarily of the retina may be due to mechanical pressure by inflammatory exudate in a neighboring sinus, to distension of a sinus wall, to toxic inflammation in the course of a low grade chronic affection, or to more pronounced vascular accidents leading to occlusion of the central retinal vessels by actual embolism and thrombosis or by simple compression. That the last modus is by no means hypothetical is shown by the number of cases in which the patency of the vessels supplying the axis of the optic nerve and the central vessels of the retina was restored and vision promptly re-established on removal of the source of inflammation or mechanical pressure.

The involvement of the optic nerve is often manifest to ophthalmoscopic examination either as neuritis or choked disc in acute cases, and as a general atrophy including the entire disc or a more localized pallor of the temporal halves in many chronic cases. Hyperemia and minor changes in the vessels, such as accentuated venous pulse, tortuous or dilated retinal veins or peri-vascular striations, may be observed at a comparatively early stage. MacWhinnie finds dilated, often tortuous, superior and inferior nasal veins. When not present, probe the sinuses in suspected cases, examine the fundus immediately and a marked congestion of the disc is seen. (N. Y. Med. Journal, Aug., 1910.) In not a few cases disturbances of nerve function have been detected before the cases disturbances of nerve function have been detected before the appearance or in the absence of fundus changes by special tests of central and peripheral vision for form, light and color. These functional disturbances are of special importance as early symptoms and because their detection frequently requires careful, skilled and repeated examination by exact scientific methods. In optic nerve affections having their point of attack some distance behind the globe, as in posterior ethmoid or sphenoid sinus disease, a retrobulbar neuritis is the rule rather than the exception, and in its early stages functional disturbances alone may lead to a positive diagnosis at a time when the nerve head is to all appearances normal. I am convinced that in this form of neuritis the optic nerve involvement may be a purely toxic type and that we have to deal with an emblyopia or amaurosis quite analogous to that produced by alcohol and tobacco, lead, and other poisons. The symptoms, at least, are strikingly similar.

Disturbances of central vision suggesting involvement of the nerve or retina on a basis of accessory sinus disease may be slight, temporary and fugacious, or relapsing. We do not refer here to more or less complete blindness due to opacities in the refracting media or inflammatory changes in the interior of the globe which are made evident to routine ophthalmic examinations, but rather to indefinite, baffling and ambiguous symptom complexes which are not infrequently ascribed to eye-strain, neurasthenia, intestinal auto-intoxication, brain fag, oculomotor imbalance, and so on. To indicate the types of functional aberration we merely cite retinal hyperesthesia and anesthesia, ocular vertigo, siek headaches, migraine, and so on. The disturbances in the peripheral field of vision, too, are much less definite and at times less marked than those occurring in the course of optic nerve disease depending on other affections than those of the accessory sinuses, although we may well bear in mind that any type of ocular disease and any type of nerve involvement may occur. There is no form of visual field contraction which can be considered characteristic or pathognomonic, and, on the other hand, there is hardly a single one which may not depend on accessory sinus suppuration. The commonest form is, however, central or para-central scotoma of retro-bulbar neuritis, ring scotoma, and irregular central defects with or without concentric contraction for white and colors and frequently without ophthalmoscopic findings. An attempt has been made to localize the sinus affection more closely and to refer the disease to this or that cavity according to the position of the defect in one or the other quadrant of the field, but this is, at least in the present state of our anatomical and clinical knowledge, illusory and impracticable. Clinical perimetry can at best inform us of the probable presence of some accessory sinus affection. It remains for clinical, and frequently for operative rhinology, to effect an exact localization. And this is preferable both scientifically and practically; for we must not forget that even if certain visual defects did indicate exclusive involvement of particular sinuses, there would still remain the question of multiple involvement. The presence of disease in one accessory cavity, however, by no means excludes, it rather suggests, the involvement of one or more others, and the all important question for therapy and prognosis, the extent and nature of the sinus affection, can be determined only on direct inspection.

Another form of central defect to which attention has of late been called, as pathognomonic of optic nerve affection based on accessory sinus suppuration, is the enlargement of Mariotte's spot, by which we designate the scotoma corresponding to the nervehead, disc, or entrance of the optic nerve into the globe. This scotoma is negative, that is it is not projected into the outer world and perceived by the subject either as a spot or as a defect in the field. It is only by special tests, such as by closing one eye and using a small test object for the central field of the other, that this small "Ausfall," or "silent area," as I call it, can be made apparent.

ENLARGEMENT OF THE BLIND SPOT.

The nerve-head has no perceptive terminal elements, e. g., no ganglion cells, no rods or cones, and is blind.

Enlargement may be due to evident intra-ocular changes, such as an unusually dense and wide pigment ring, an atrophic myopic crescent or the residua of a papillitis, opaque nerve fibers, and occasionally, to purely functional disturbances in hysteria and other psycho-neuroses. Enlargement without intra-ocular changes is explained by an involvement of a special bundle of nerve fibers, the peri-papillary bundle which in the canalicular portion of the nerve and possibly in its orbital course as well form a concentric superficial layer immediately beneath the pial sheath. This situation explains the vulnerability by extra-neural agencies. In a large series of cases of disease of the posterior accessory sinuses Van der Hoeve (Nederl. Tijddschr. II, p. 1140, 1910*) noted an invariable enlargement of the blind spot, while in affections of the anterior cells this symptom was missing. Central color scotoma was always a later symptom, while in toxic retro-bulbar neuritis, acute or chronic, this symptom and the enlargement of the blind spot were noted simultaneously. These observations were confirmed by De Kleyn (Ibid. I, p. 928, 1910), who made routine ophthalmoscopic examinations in all his cases of accessory sinus disease whether there was complaint of ocular disturbance or not. De Kleyn, too, noted that the enlargement of the blind spot for colors preceded that for white. This symptom he ascribes to circulatory and toxic changes. In ethmoidal suppuration, neuritis and choked disc are less frequent than retro-bulbar neuritis. Temporary occlusion, thrombosis of the central vein, and transient detachment of the retina completely cured by treatment of the accessory cavities, were also observed by him. The frontal sinus plays a minor role in the optic nerve complications.

NORMAL SIZE AND POSITION OF THE BLIND SPOT.

By a simple perimetric test, with the patient fixing the center of the arc and a small test object not more than 5 mm. square moved

^{*}Translated in Knapp's Archives of Ophth., Vol. XL, 1, p. 30, Jan., 1911.

outward until it disappears, the blind spot of Mariotte can be located about 15° to the temporal side of the point of central fixation corresponding to the actual location of the optic papilla at this angle from the macula. In hyperopic eves over three dioptries or more the blind spot is further away, up to 19°, while in myopia it is nearer, down to 11°, to the center of the field. The center of the blind spot is usually a trifle, 3°, lower than the meridian through the center of the field, owing to the fovea centralis being somewhat higher than the center of the disc. Van der Hoeve's examination of 100 eves of subjects between 18 and 22 with a campimeter at 2 meters distance showed that the blind spot formed a fairly uniform oval with its greater axis vertical, 15° 34' from the point of fixation and 1° 41' below it, about 5° 43' horizontal and 7° 26' vertical diameter, surrounded by a zone relatively blind for white of 1-1°, and this again by a zone of relative color blindness, averaging 3°. Van der Hoeve considers a horizontal diameter of the blind spot for motion of 7° as too large, and one over 6° as suspicious. This or a relative color scotoma of more than one degree should lead to further investigation. Determination of the limits of the blind spot requires care, patience and special though simple apparatus. The ordinary perimeter may be used, provided test objects are employed which are not more than 3° in diamteer. At the usual distance of visual field measurements this corresponds roughly to 2.4 mm. Accurate and steady fixation on the part of the patient is naturally essential in mapping the limits of the blind spot, and particularly in determining the narrow zones of relative blindness surrounding it. Binocular fixation is of great assistance and may be insured by the use of a stereoscope or by having both eves open and screening one of them during examination in such a way that the point of fixation is seen with both eyes and the test object only with the eve nuder examination. To facilitate measurements the arc of the perimeter, reaching from 10° to 30°, may be divided by vertical lines into single degrees. The figures found may then be plotted on the regular perimetric charts, or on special enlarged diagrams of the center of the visual field. White, blue, red and green test objects are used, Van der Hoeve and others agreeing that vellow gives unreliable data. Progressive enlargement of the blind spot is especially significant and bilateral involvement may be observed in one-sided sinus affections. This, with central color scotoma, is one of the earliest symptoms of retro-bulbar neuritis, representing an affection of the maculo-papillary bundles and peripapillary bundles at a time when central vision and the peripheral

limits of the visual field are still normal. It may, of course, be observed in retro-bulbar neuritis due to other causes, notably toxic influences (tobacco, alcohol, lead, filix mas, intestinal decomposition products), less frequently in sympathetic ophthalmia as a prodromal symptom, and in hysteria. Nevertheless, the presence of an enlarged blind spot should always lead to careful examination of the posterior accessory cavities, and conversely the presence of an accessory sinus suppuration should require careful tests of the center of the field of vision for white and for colors. The vulnerability of the peri-papillary bundle is well shown by the enlargement of the blind spot in acute nasal catarrh of very short standing where there was muco-pus retention in the posterior accessory sinuses which could not have lasted more than a week. It is further indicated very beautifully by decrease or increase in dimensions of the blind spot keeping pace with operative treatment and local relapse, respectively. Thus, in one of Van der Hoeve's cases, the recurrence of polypoid growths in the posterior ethmoid cells after curettage was signalized by the recurrence of blind spot enlargement which had previously been reduced to normal by the surgical procedure. Differential diagnosis, aided by predominance of unilateral symptoms, by exclusion of other etiological factors, and ex juvantibus, by marked improvement following treatment of accessory sinus disease. The absolute size of the scotoma is not diagnostic, as apparently only slight enlargement may in reality indicate a blind spot which under normal conditions is unusually small. It is probable that ophthalmoscopic examination and the establishing the presence of a very small disc might show this. The course of the scotoma is the most significant feature. It is worth mentioning that other accessory sinus and nasal affections, such as ozena, antrum disease, frontal sinus suppuration, and so on, were negative as to this point.

THE NEW ANTIGLAUCOMATOUS OPERATIONS.

DOCTOR LOUIS DOR LYONS, FRANCE.

Translated by L. Webster Fox, M. D., LL.D., Philadelphia.

The first operation designed for combating glaucoma was the equatorial sclerotomy of Guerin, a surgeon of Lyons*. See in what terms this initiator expresses himself:

"When the vitreous humor is in too great abundance the pupil is dilated to its fullest extent and has almost lost its elasticity. Such patients complain of a deep, dull pain at the back of the eye, which extends sometimes to the front of the head, because the volume of the vitreous body compresses and dilates the retina, an expansion of the optic nerve; the sight is affected because the retina is injured."

After having enumerated the medicinal remedies to be tried in that sort of hydropsia, Guèrin adds:

"If all the remedies are without success, one comes to the puncture of the eye in the sclerotic or opaque cornea. That puncture ought to be simple and without much preparation, and it can be executed by a rather broad cataract needle. The effort which is being unceasingly made by the over-dilated sclerotic to return to its natural state suffices for the expulsion, little by little, of the superfluous humor."

Guèrin's operation has arisen periodically from its ashes and has become Sclerochoriotomy, Ophthalmotomy—Posterior Sclerotomy. Then having fixed upon the term Posterior Sclerotomy it remains an operation excessively simple, an operation of urgency and permits of crises of acute glaucoma being passed through without the vision being definitely compromised after the crisis. But that operation terminates always with a solid cicatrix and not filtrating, and at the end of a month the glaucoma again makes its appearance.

This operation is not absolutely exempt from dangers, for it has happened that intra-ocular hemorrhages have taken place into the vitreous body. That is why we would much prefer Posterior Sclerectomy to simple Sclerotomy, but in general the hemorrhage is very slight and that inconvenience is not to be opposed to the immense advantage of rapid diminution of the tension. The diminution is temporary, it is true, but it permits of the performance, under good conditions, of all the operations really curative. Equatorial sclerotomy deserves to retain a place in the list of anti-

^{*}Traité sur les maladies des yeux, Lyon, 1769.

glaucomatous operations, but it should not be reckoned today in the rank of a curative operation.

About the middle of the last century Von Graefe applied to glaucoma the operation of iridectomy, which he had seen practised by Desmarres for other ocular affections, and he discovered the curative action of that operation in glaucoma.

During thirty years iridectomy reigned an absolute mistress in ophthalmology after having supplanted posterior sclerotomy.

By degrees it was evident that iridectomy was not curative in all cases and in some it was shown to be dangerous. There was a desire to do better. Towards the close of 1871 De Wecker practised simple anterior sclerotomy; Vincentiis¹ proposed internal sclerotomy and Parinaud declared in 1901, in discussing the report of De Wecker to the French Ophthalmological Society, that he sought to make filtration cicatrices by leaving the iris incarcerated in the wound.

The report of De Wecker and the important discussion which followed mark an epoch in the history of glaucoma. The numerous new methods which pretend to supplant iridectomy are the result of that report. The idea of creating a filtrating cicatrix was formally expressed, but the practical means of realizing it was not yet forthcoming.

In 1903 the English military surgeon Herbert² made an interesting communication, which is referred to in the Revue Generale d'Ophtalmologie of 1904.

Herbert commenced in his immense practice in the East Indies to treat 130 cases of glaucoma by intentionally leaving the iris prolapsed in the scleral wound; then convinced of the utility of the interposition of a membrane into the wound, but aware of the possible danger of interposing the iris, he thought of introducing a conjunctival flap.

He reports having performed ten operations with the following technique:

"I use a small, sharp, curved needle with sterilized silk thread; the double thread knotted about one or two inches away from the needle. The point of the latter is passed through the sclero-corneal wound, barely into the anterior chamber, and brought forward through the cornea. When the thread was pulled upon, the knot drew down the center of the conjunctival flap, and pressed it against the posterior surface of the cornea. This knot was retained in

^{1.} Vincentiis.—Rev. gen. d'Ophtal., Oct., 1895. 2. Trans. of the Opht. Soc. of the United Kingdom, XXIII, 1903 Ophth. Review, p. 234, 1903.

position by a second knot immediately in front of the cornea." The immediate results of the operation appeared to be very satisfactory.

In all cases the idea of maintaining the filtrating cicatrix by means of a special operation has led to its execution with a new technique. It can be believed that the ultimate results have not realized what was promised as the initial method has undergone such numerous transformations that it is no longer recognizable.

The most recent modification—that of Harman³—is theoretically very fascinating. It consists in producing a movable sub-conjunctival scleral shutter, that is to say a true valve, opening from within outward for the escape of the aqueous humor. The shutter is made by means of an incision parallel to the sclero-corneal limbus, and of two small incisions perpendicular to the extremities of the initial incision; incisions directing themselves towards the sclero-corneal limbus upon a meridian. One thus makes a sort of rectangular lid, of which one of the borders remains adherent, the conjunctiva covering all.

A special instrument resembling a small spade permits of the transverse and two little perpendicular incisions being made simultaneously.

A very different idea arose in the mind of Heine4. That author thought that in place of seeking to make a sub-conjunctival filtration, he would endeavor to create a tunnel, permitting the fluid of the anterior chamber to penetrate into the sub-chorioidal spaces, and that is the operation which is called cyclodialysis. Cyclodialysis already possesses an important literature. The most recent work on that operation is that of Meisner and Sattler5. It appears from the different works relative to cyclodialysis that the operation is especially recommended in cases where the anterior chamber has disappeared, in cases where the tension is very much increased, in cases complicated with luxation of the lens, in hemorrhagic glaucoma, in hydrophthalmia, in cases where iridectomy has failed, and finally in glaucoma following operations for cataract. From an optical point of view, cyclodialysis presents the advantage of leaving a round pupil, and permitting myotics to exercise a more powerful action. The technique of the operation is as follows: After incision of the conjunctiva and the episcleral tissue, an incision is made in the sclerotic as far as the chorioid. A fine spatula is then introduced between the chorioid and the sclerotic, and directed towards the angle of the anterior chamber, severing the

^{3.} The Ophthalmoscope, 1911. No. 11.

Son Copplia and de Hendelbarg, 1905.
 Archiv für Augenheilk. Vol. LXXI, p. 34 (March, 1912).

attachments of the ciliary body to the sclerotic. One penetrates into the anterior chamber, and endeavors widely to detach the ciliary body.

The aqueous humor should be evacuated, but the pupil ought not to lose its form. The operation does not appear to be very difficult to Meisner and Sattler, who have performed it 54 times, and have found it simpler than iridectomy. As regards complications, they have observed hemorrhage in fifteen cases, of which in five instances the blood was absorbed in less than eight days, three in less than fifteen days, and seven in a much longer time. Another complication which may supervene is the perforation of the uvea; in one instance from an unforeseen movement of the patient there was an escape of the vitreous body.

During some hours after the operation cyclodialysis seems to produce more severe pains than iridectomy, but they are of shorter duration.

There is no doubt that cyclodialysis deserves to be studied, and the future will determine its curative value, when we shall know the ultimate results of this method, which is very new. At present the operation has some defenders, and some detractors, but it has not been adopted by a large number of operators.

In 1906 Lagrange⁶ in his turn proposed to favor a sub-conjunctival fistula, at the seat of the limbus by a sclerectomy, which he made at first a complement of iridectomy, and which later he proposed to perform without iridectomy, or with only a small peripheric buttonhole. We will not extend our remarks upon the operation of Lagrange, as all which concerns it has been published in the French language, and in all the journals which are read.

The technique of Lagrange has been modified by secondary procedures, such as the operation by the punch of Holth (1) and that of Dor (2), that of Jacqueau (3), and that of Coppez (4).

But the idea of fistulization at the limbus by a systematic sclerectomy belongs entirely to Lagrange. The operation has met with instances of remarkable success; it has also had some regrettable failures, and the question is always the same: is the fistulization established in a definite manner, and are the patients really cured? This is what the future alone will be able to teach us.

Thus in Germany, Heine had had the idea of cyclodialysis, and

^{6.} Arch. d'Ophtal., aout, 1906; Revue d'Opht., p. 358, 1906.
(1) Holth.—Soc. Med. Christiania, 1908, Cong. franc. d'Opht., 1909;
Congrés d'Oxford, 1911.
(2) Dor.—Cong. franc. d'Opht., 1909.
(3) Jacqueau.—Cong. franc. d'Opht., 1910.
(4) Coppez.—Arch. d'Opht., 1911, p. 31.

in France Lagrange had made known his sclerectomy, Elliot (5), an English Army surgeon in the East Indies, operated upon a considerable number of cases of glaucoma by trephining without knowing of the work of oculists in Europe. Assuredly before Elliot, other operators had trephined the anterior chamber, they being Argyll-Robertson, Blanco, and as remarked by Stephenson (6), especially Fergus (7) of Glasgow, who had published a note two months before that of Elliot, but they have been the undecided precursors who have entertained the idea without rendering it practicable.

Major Elliot has really created a method which deserves to retain his name because it differs greatly from the sclerectomy of Lagrange. See how he describes his operation:

After having purged the patient, four leeches having been applied around the orbit, opium having been administered to the patients, they come together every Thursday, the day devoted to operations for glaucoma. A 4% solution of cocaine is instillated four times at intervals of two or three minutes; the conjunctiva is carefully flushed and the anesthesia of the patients is well marked.

One makes first of all a triangular flap of conjunctiva, dissecting it up as far as the cornea. The dissection of the flap ought not to be tangential, otherwise when one may perforate the flap, it is necessary for the point of the scissors to be directed in the plane of the posterior pole of the crystalline. The point at which the trephine should be applied upon the sclerotic ought to be also as near as possible to the limbus. One is made aware that he has penetrated into the anterior chamber by the flow of aqueous humor mixed with blood, by a special sensation of sinking in and by a movement of the patient. The trephine used by Elliot is by preference that of Stephenson, manufactured by Weiss.

Arnold & Son have recently made a more perfect model. All trephines which have a diameter greater than two millimetres are considered by Elliot as being too large. In the course of the trephining it may happen that the disc will fall into the anterior chamber, but that complication is of no great importance. It may happen also that the iris becomes protruded. In such a case it should be incised in the radial direction; exceptionally one can also make a small iridectomy, but it must be without dragging upon the iris.

When the pupil is somewhat displaced, or when the anterior

⁽⁵⁾ Elliot.—The Ophthalmoscope, dec. 1909 et aout 1911.
(6) Stephenson.—The Ophthalmoscope, fev. 1910.
(7) Fergus.—Brit. med. journ., 2 Oct., 1909.

chamber becomes filled with blood, the author practises a lavage of the anterior chamber with the MacKeown irrigator. It is needless to suture the flap.

On the third day atropine is instillated to prevent the formation of posterior synechiae. When hernia of the iris in the wound occurs during convalescence, it is necessary to turn back the conjunctival flap afresh and excise the prolapsus.

The first trephining for glaucoma was made on the 2nd of August, 1909, and at the end of two years Elliot was able to furnish statistics of 403 operations. The definite results of 66 patients seen at the end of two years is given in the course of the publication.

The trephining of Elliot appears a priori to be a rational operation. The future will tell if it is superior to the other methods. great effort is being made on all sides to wrestle with glaucoma. is well to follow with interest the results obtained in the hope that that formidable disease will soon be combatted by sure methods.

At one time Jaboulay, Jonnesco and Abadie were hopeful of effecting something by sympathectomy. That operation has now been abandoned. We have ourselves ceased to advise it after seeing the ultimate results. We presented to the Societè Française d'Ophtalmologie in 1901 a patient affected with bilateral glaucoma, absolutely equal in the two eyes, and on whom we had performed iridectomy upon one side and Jaboulay had performed sympathectomy upon the other side. For several years the result had been equally good in the right as in the left eye, but last year when we saw the patient, aged 80 years, he was infirm and unhappy. He still saw with the iridectomized eye, but he saw nothing upon the sympathectomized side.

We have seen also an old sympathectomized patient outside of Lyons who had lost vision notwithstanding that the result was at first favorable in appearance. Then an iridectomy had to be performed to retain the vision of the other eye.

Sympathectomy will probably never be reborn from its ashes excepting as a complementary operation in glaucoma. All the new operations of which we have spoken have had, however, since their appearance, another merit—that of reviving the ardour of the defenders of iridectomy. From all sides have come statistics of the later results of iridectomy. The statistics of Hallauer (1) respecting 200 cases, statistics of Irma Herezogh(2) in reference to 310 patients, and of Von Grosz, and the statistics of de Koster (3), etc.

⁽¹⁾ Arch. f. Augenheilk, XLVII, 217. (2) Szemeszet, 112, 1905. (3) Koster. Arch für Ophtalm. LXIV, p. 534, 1906.

The iridectomists defend themselves and the impartial observer who reserves his opinion does not yet know to whom will be the victory.

The tonometer of Schioetz has lent to our observations a character of precision which they have not hitherto had, and little by little the light is growing.

If we may be permitted to give in conclusion an opinion, we will say to all those who study the question—perform iridectomies, partial sclerectomies of Bettremieux(1), or complete scterectomies according to Lagrange, perform trephinings, cyclodialyses;—devise still other methods providing they shall be rational. Do as Halben(2) has done—make the drainage of the anterior chamber permanent with an artery of the calf, but remember that whatever may be the procedure that you employ, you are exposed sometimes to post-operative complications. If you have the misfortune to see a case of post-operative acute glaucoma, think immediately of posterior sclerotomy or equatorial sclerotomy. It acts by producing an immediate, important decompression. In this way one can save the compromised vision without losing time by instillating eserine or making broader iridectomies.

Equatorial sclerotomy is as urgent as the cutting of the rope of a hanged person. Incise broadly, and if the vitreous body makes a hernia in the wound, it is of little importance. The decompression is assured for some days, the optic nerve is saved and the cicatrization will always take place. We specially devised posterior sclerectomy by means of a punch*, but evidently that operation can be done also with the trephine. We know of cases where we have regretted not having performed posterior sclerectomy, but we do not know of any in which we regretted having performed it. Quite recently Romer° has devised trephining of the sclerotic beneath the inferior rectus muscle, previously detached and sutured afterwards. and he sees in the choice of that place the impossibility of a hernial incarceration of the chorioid. From that point of view there may be reason, but our impression is that one ought to make a chorioidal resection as broad as the scleral section and for that operation, distinctly palliative in the subacute forms, it is not necessary to make an incision protected by a muscle. It is remarkable that the operation so simple, of which the idea goes back to Guèrin, which has been performed by Woolhouse and by Mackenzie, then by Wecker, Parinaud, Motais, etc., should not have been considered by all

⁽¹⁾ Clin. Ophtalmol., 1911.
(2) Halben.—Arch. f. Augenheilk, LXII, 392, 1909.
*L. Dor.—Cong. franc. d'Ophtalmol., 1909.

oculists as an operation of urgency in all sub-acute forms of glaucoma. It should be a preparatory operation in the acute forms not already operated on and an operation of salvation to the eye in the post-operative acute forms.

Abstracts From Recent Ophthalmic Literature

AMBLYOPIA AND BLINDNESS

THE TREATMENT OF WORD-BLINDNESS, ACQUIRED AND CON-GENITAL.—Henshelwood, James, Glasgow. (Report of the 1912 meeting of the Brit. Med. Association, The Lancet, Aug. 17, 1912.) The reader of this paper said that the old idea is that nothing could be done for the education of persons suffering from these serious defects. Much, however, could be done if the treatment were conducted on proper lines, and he indicated what line, in his experience, was the best to adopt. Pure cases of acquired word-blindness almost always came to the ophthalmic surgeon in the first instance, as it was supposed that the defect lay in the eyes. The lesion, however, was either in the brain, in the angular gyrus itself, or it was due to the interruption of the communicating fibres between it and the ganglia. In right-handed people the lesion was on the left side.

He related the case of a man, aged 58 years, who awoke one morning with the power of reading quite lost. He had right lateral homonymous hemianopsia, but no other symptoms were discoverable. He started to re-educate himself, learning letters and words like a child. After six months he was able to recognize the letters of the alphabet, but never learned to read words by sight. He could read only by spelling words out letter by letter and thus stimulating his auditory memory. After a year, he gave it up as hopeless; still he had reacquired the visual memory of the letters and of a few short words. Another patient was a woman, aged 34 years, who had been completely word and letter-blind for fourteen months; she had right homonymous hemianopsia. A school master took great interest in her re-education. It was found that the effort of education was very great, and could not be continued for more than 10 minutes at a time. Ultimately she learned to read simple Bible texts by spelling out the words. Her progress has been steady but slow from that point of attainment; but now, after an interval of ten years, she could read a newspaper fairly fluently, only occasionally she was compelled to spell words. The third case was that of a girl, aged 14 years, who had had right-sighted paralysis and loss of speech 18 months before. Previously she had been a good reader. When first seen she was completely letter blind and had right homonymous hemianopsia. Her auditory memory was unaffected. Re-education was started. After learning the alphabet she was allowed to spell out words letter by letter. In four months she had made considerable progress and could recognize any letter and many small words. Longer words she had to spell so as to get the aid of her ear. Two years later she could read as well as ever but the hemianopsia persisted.

Age evidently was a very important factor in the ability with which the patients were able to regain their lost powers. The cause in all these cases was cerebral haemorrhage. In such cases the process of re-education should be delayed until all signs of acute brain symptoms had disappeared. In such cases it could be accomplished only by bringing into play the corresponding center on the other side of the brain. He argued from these cases of acquired word blindness and the experience of re-education that both in these and in congenital cases neither the old system nor that known as the "look-and-sav" method was suitable for all cases. A great deal depended upon the degree of defect in the visual memory, and upon the condition of the auditory memory. When the visual memory was very defective and the auditory good, then the old system would give the best results; but when the auditory was not good the best results might be obtained by the "look-and-say" system. Lastly, personal teaching was necessary in all cases, and a number of short reading lessons during the day was better than one long one, for the brain rapidly became exhausted.

C. H. M.

ANOMALIES.

COLOBOMATA OF THE EYE.—HIRD, R. BEATSON, Birmingham, Eng. (Oph. Review, June, 1912.) The writer analyzes 16 cases of this sort and commences his article with the following statements: In none of the cases was there any sign of heredity; in no case had the mother suffered from any definite intra-uterine inflammation nor any definite febrile disease during pregnancy; in no case was there any positive evidence of syphilis in either parent or congenital in the colobomatous patient.

The histories of the 16 cases forming the basis for this paper are given. In these 16 cases there were 26 colobomatous eyes and almost all of these presented errors of refraction; they were evenly divided between hyperopia and myopia, and astigmatism predominated only slightly. The acuteness of vision was generally defective and in some cases very bad. When the lens was involved, even if there were no opacity, vision was bad; the worst vision seemed to be associated with coloboma of the nerve head and sheaths.

The fields could be taken in ten cases only; in 2 there was slight general contraction; in 2 marked general contraction; in 3, a definite notch in the field corresponding to the coloboma; in one, contraction corresponding to the coloboma; in 2, full and normal field.

Regarding the varieties of coloboma, in his series of 26 eyes, the occurrence was as follows: Iris, 22; chorioid, 20; nerve entrance, 10; lens, 8; macula, 1. In 119 cases reported in literature these varieties were as follows: Iris, 82; chorioid, 24; nerve entrance, 34; lens, 22; macula, 6. There was scarcely any undue prevalence in either eye and in most instances both eyes were affected.

Respecting prognosis, the writer says there is sufficient evidence to show that these eyes are more liable to inflammations and disease, and he believes that, on this account, they are unsuitable ones to operate upon.

C. H. M.

Congenital Bilateral Aniridia.—Fejer, J., Budapest. (Centralblatt f. prakt. Aug., 36, August, 1912, p. 227), reports a case in a man, aged 21, with V. 7/15, through stenopaeic slit 5/10, myopia—4.00, and a range of accommodation of 11.00 D., no astigmatism, no photophobia. The mechanism of accommodation could not be observed, as Uhthoff did in one of his cases. The iris was completely lacking, and no iris tissue was drawn forward from the sinus by eserin.

C. Z.

BACTERIOLOGY

The Value of the "Direct Smear" in the Bacteriology of Conjunctivitis, With Analysis of a Thousand Cases.—Browning, S. H., London. (Oph. Rev., April, 1912.) The writer gives statistics, derived from 1,000 consecutive cases of conjunctivitis, in which the results obtained from smears are contrasted with those learned from cultures, and of interest, therefore, to those ophthalmologists who have not at hand the conveniences of a laboratory with culture media and incubators; these results indicate the amount of reliance which can be placed on smear preparations when cultivations cannot be made.

All these cases were examined by direct smears made on slides, and at the same time cultures were made on suitable media. Human blood agar was used in every case throughout this examination, as all the ordinary eye organisms grow well on it, whilst it is quite the best medium for growing the Koch-Weeks bacillus and the gonococcus, and is of considerable assistance in differentiating the pneu-

mococcus from streptococcus longus. The other media used were nutrient agar, blood serum and broth. In the cases of ulceration of the cornea which are included in this list, where possible the smears and cultures were made from scrapings from the edge of the ulcer.

The following table shows the percentage of cases in which the organism was found in the direct smear and subsequently confirmed by culture:

		Presumptive
	Presumptive	Diagnosis
Organism.	Diagnosis.	Confirmed.
Gonococcus	86.5%	59.4%
B. Lacunatus (Morax)	59.4%	32.6%
B. Aegypticus (Koch-Weeks bacillus)	86.0%	41.2%
Pneumococcus	60.0%	45.3%
B. diphtheriae	61.5%	61.5%
B. pneumoniae	20.0%	20.0%
Streptococcus longus		8.0%
ī		С. Н. М.

THE PATHOLOGY OF INTERSTITIAL KERATITIS IN TRYPAN-OSOMIASIS AND SYPHILIS—YORKE, WARRINGTON, Liverpool. (Med. Press, May 15, 1912.) The writer calls attention to the resemblance which syphilis bears to sleeping sickness in many important respects; both are the result of protozoal infection and clinically present many points in common, including affections of the eye.

Three goats and a horse inoculated subcutaneously with a strain of trypanosomes derived from a case of sleeping sickness all developed interstitial keratitis which was remarkable in being transient. The corneae of these animals showed upon microscopical examination marked thickening of the substantia propia, a scattering of oedematous patches, marked cellular infiltration, large numbers of trypanosomes and considerable vascular formation. The rapidity with which these processes occurred in the cornea was very remarkable.

Although the *Treponema pallidum* has yet to be demonstrated in the corneae of patients suffering from syphilitic interstitial keratitis, there is a considerable amount of evidence in support of the view that this condition results from the presence of spirochaetes in the substance of the cornea. The writer refers to experiments in which the eyes of apes were inoculated with syphilitic material and in

207

which the multiplication of the Spirachela pultida in the substance of the cornea was seen; to the production of keratitis in the eves of rabbits and dogs by injecting small particles of a human chancre into the anterior chamber; and to Stephenson's demonstration of spirochetes in the apparently normal eyes of syphilitic foctuses and babies.

He says: "It would thus appear that the spirochaetes may lie dormant in the cornea and other parts of the eye for many years. They cause no mischief until some determining factor, of a local or general nature, lowers the resistance of the tissue, and allows the parasite to get the upper hand, when an attack of interstitial keratitis results."

In conclusion he emphasizes his opinion that these lesions in protozoal infections result from the local multiplication of the specific outside, and are not usually tropics or toy a manufactuations of the disease.

C. H. M.

CATARACT.

THE NEW OPERATORS OF EXPENCE TO SOFT CHARGE. Trumpers was, Ambiguer of the state of the describes a valuable addition to the literature on cataract extraction. He describes thoroughly his technique in this operation. He furnishes numerous illustrations which show the instruments used, methods of using them, position of operator and assistant, different forms of coloboma of the iris, demonstrations of delivery of the lens, etc. The many careful illustrations make each step of his operation clear. He calls attention to the need of a sufficiently large incision, and emphasizes especially the necessity of being prepared to use the spoon, giving illustrations of its use.

M. D. S.

A NEW MITHOLOGIENTENCTION OF CATERICET NOTIFIC CAPSILE.—Hosford, J. Stroud, London. (Lancet, May 25, 1912.) The writer calls attention to the advantage of removing the lens in capsule if it could be done with safety. During the present year he had performed nine cataract extractions by a new method, which consisted of entering a discission needle into the lens and then rotating the lens on an antero-posterior axis. This caused the zonule of Zinn to be torn, after which the lens, in its capsule, could be removed without the less of vitreous. The lens could be thus rotated either before or after the making of the section. If this method were adopted incomplete cataractous lenses could be removed, and it

had all the advantages of Smith's operation, besides being safer and not so complicated.

C. H. M.

Intracapsular Cataract Operations.—Stanculeanu, G. (From the eyeclinic of Prof. Stanculeanu in the University of Bukarest. Klin. Mon., für Aug., 50, I, May 1912, p. 527), reports on 20 cases, operated on, according to the method of Smith, and on 240, according to his own method, entering in detail into the complications. The immediate results of Smith's method were good, but were later on deteriorated by complications, e. g. hemorrhages, opacities of the vitreous, etc. The objection raised against Smith's method on account of loss of vitreous, is, according to S., not the worst feature of it.

S.'s own method consists in grasping the capsule with a bent forceps without tearing it, and loosening the zonula by sideward movements. He concludes, that the extraction within the capsule succeeds by no method in all cases. In some cases Smith's method is dangerous, especially if the introduction of a spatula becomes necessary. From 60% to 70% of the cataracts can be extracted with the author's method without the least danger. If the capsule tears, it is pulled out, and if the insertions of the zonula are firm, a toothed forceps may be used.

C. Z.

To the Question of Peristaltic Contractions of the SPHINCTER OF THE PUPIL.—MÜNCH, CARL, Goeppingen (Klin. Mon. für Aug., 50, I, June 1912, p. 745), mentions with reference to the article of C. H. Sattler, in which the peristaltic movements of the sphincter are considered as something new and pathological, that he described them in 1907 as a physiological phenomenon. He recommends autopupilloscopy for its better observation, and thus summarizes the process: I. The sphincter of the pupil consists of from 70-80 physiological segments, each supplied by a nerve stem, from which it receives separately a stimulus. 2. The length of a segment is that of a smooth muscular fiber. 3. In the medium sized pupil, weak illumination and adapted retina, the movements have a peristaltic character. 4. The contraction of the sphincter is only apparently uniform, i. e. simultaneous in all segments. The apparent uniformity is deceptive on account of the rapidity of contraction that follows intense stimulation by light.

SIMPLE SENILE CATARACT EXTRACTION WITH INCISION OF THE ROOT OF THE IRIS.—ELECTINIS. A., Prague (Ann. Ophthal., July,

1912). The author believes the optical results and cosmetic effects of a round central pupil are vastly superior to the pupil after iridectomy. He has operated upon 287 eyes by a method advocated in 1895 by Bajardi. This method is as follows: After the regular incision and capsulotomy have been performed, the corneal flap is grasped with forceps and laid back. The iris, completely exposed, is then incised close to the scleral lip of the wound with the small pointed branch of a de Wecker scissors, practically raising a fold of the iris and making an incision about 1 mm. long parallel to the edge of the cornea.

He finds this small hole in the root of the iris, allows the aqueous to escape through it, thus preventing the iris being pushed into the wound during the healing process. In his 287 operations he has only had iris prolapse twice, and in these two cases he attributes the prolapse to insufficient incision of the iris. The patients were so restless during the operation that he could not be sure of the extent of the iris incision.

M. B.

SIMPLE FLOR EXTRACTION OF SINIL CATARGET. WITH PERFERENCE INCISION OF THE IRIS.—ELSCHNIG, A. Prag. (Arch. Opth., July, 1912, XLI, 342. Translated from the Arch. f. Aug., Vol. LXIX, 1911), believes that iris prolapse in simple extraction can, to a great extent, be eliminated by proper selection of cases. He states that simple extraction is contraindicated when, after the instillation of homatropine, an insufficient mydriasis results. Also in very prominent eye balls with abnormally wide palpebral openings and when the lids are unusually tight. He also mentions, as contraindications, adiposity, cardiac lesions, bronchitis, especially pulmonary emphysema, severe metabolic disturbances, when a traumatic iritis or an iritis due to metabolic disturbances is to be expected, when an iritis has preceded the operation and when the lens is dislocated. The author does not consider diabetes to be a contraindication to operation, but believes it safer to do an iridectomy.

In a series of 233 cases of simple extraction the author had iris prolapse in 4.7%. In cases of prolapsed iris Elsehnig advocates an incision into the root of the iris and replacement, instead of excision of the prolapse, and also practices it in simple extraction in order to avoid prolapse. The author makes his iris incision after opening the lens capsule. With this method of operating he had no prolapse in a series of 100 cases of simple extraction. W. R. M.

REMARKS ON ELSCHNIG'S ARTICLE ON CATARACT EXTRACTION.—Hess, C. Würzburg. (Arch. Ophthal., July, 1912, XLI, 349), found

that after iris incision the number of cases of iris prolapse was reduced, but could not be entirely avoided and abandoned that method of operating in favor of excision, believing it to be better and more reliable.

W. R. M.

DAVIEL'S KNIFE FOR CATARACT EXTRACTION IN OUR DAYS.—SANTOS-FERNÁNDEZ, JUAN. (Crónica Médico-Quirúrgica de la Habana, April 15, 1912). The renaissance of Davel's cataract knife is warmly recommended by the author, recommending not the original knife, but the ones made nowadays. The advantages are that the iris is defended by the same blade and there is no danger of slicing the pupillary margin. The knife reaches the periphery better and the conjunctival flap can be made easier. He uses Jacobson's two stages method, accepting that innovation which he saw in his recent trip to New York.

F. M. F.

THE TREATMENT OF THE EARLY STAGES OF SENILE CATARACT.—SMITH, HENRY, Jullundur, India (Arch. Oph., July, 1912, XLI, 323), reports the results of the use of subconjunctival injections of cyanide of mercury in nine cases of incipient cataract. All the cases reported showed a marked improvement in vision for both distance and near. The author believes that vision that has been reduced by half or less for distance is amenable to treatment, while if vision is reduced over a half there is little hope of improvement.

Smith states that in some cataracts the result is phenomenally successful, in others not successful or only partially so. He does not define the varieties in which treatment is not successful.

Improvement in vision was noticed by the patients on the third or fourth day and continued for 3 or 4 weeks. W. R. M.

The Treatment of the Early Stages of Senile Cataract.—Smith, Henry, Jullundur, India. (Lancet, April 20, 1912). The writer reports the results of his experience in attempting to improve the vision and arrest the progress of the affection in early stages of senile cataract by the subconjunctival injection of 1 to 4000 solution of cyanide of mercury. He gives the histories of eight cases to show that in some cataracts the result is phenomenally successful, in others it has not been successful or only partially so. He is inclined to believe that vision that has been reduced more than half or less for distance is amenable to treatment, but that if reduced more than half there is little hope for improvement; the most promising subjects are those in which distant vision has been reduced by about 30

per cent or under. In the 8 cases reported the vision was increased on the average from 6/18 to 6/10.

"The pain induced by a subconjunctival injection of cyanide of mercury under cocaine is very severe—it lasts for three or four hours, after which it amounts to a mere inconvenience. To control this it is necessary to put the patient lightly under chloroform and to give him a hypodermic of at least 1/3rd grain of morphia. The eye looks exceedingly ugly for several days and patients should be warned beforehand not to be alarmed at this. I have never seen any evil results from the use of subconjunctival injections of cyanide of mercury; and the conjunctiva after a few weeks resumes its physiological condition. The improvement in these cases was first noticed by the patients on the third or fourth day, and improvement goes on steadily for close on a month. Time will show if this improvement will be permanent."

C. H. M.

DETERMINING THE MATURITY OF SENIER CATARACT FROM THE BIOCHEMICAL REACTION OF THE LENS.—REIS, Wiktor. (From the eyeclinic of Prof. Machek in the University of Lemberg. Arch. f. Aug., 72, p. 156). The anatomo-pathological changes of the cataractous lens are chiefly of a degenerate nature and the degree of maturity of the cataract depends upon the intensity and extension of these processes. But the anatomical examination of the nucleus frequently does not indicate whether we have a nucleus of a normal or a cataractous lens. The physical properties of the lens also change during the formation of cataract. At first the lens shrinks, in the second stage its volume becomes larger from the intussusception of water from the surroundings by diffusion, which afterwards goes out again. Between these two stages another one exists, in which the lens attains its former normal volume, and this corresponds to the maturity of the cataract. The lens becomes opaque, but the nucleus from sclerosis of the lens fibers may not materially differ from that of a senile lens of the same age.

R. found that chemically the cystein reaction of the senile cataract is an indicator of its maturity. According to this a cataract can be declared as completely mature, in which the nucleus and the cortex show no cystein reaction. The less mature a cataract, the more easily a trace of cystein reaction can be obtained in the cortex. The nucleus of the cataractous lens, although less damaged anatomically and physically, always shows first negative cystein reaction in the cataractous process.

C. Z.

TO THE CHEMISTRY OF SENILE CATARACT.—JESS, ADOLF (From the eyeclinic of Prof. C. Hess and the physiological institute in the University of Würzburg. Arch. für Aug., 71, p. 259), experimentally confirmed the observations of Reiss, that in the normal lens no difference exists between the cystein reaction (turning red with sodium nitroprusside and ammonia), of the peripheral and the central strata of the normal lens or traumatic cataract, and that in senile cataract this reaction either totally or partially disappears. In immature cataracts the cortex reacted distinctly, in some cases also the nucleus. J. examined 120 lenses of cattle and 36 normal human lenses chemically with regard to their albuminous constituents, which is described in detail, with the following results: The albumoid, which is insoluble in water, gives not the least, Alpha-Kristallin slight, Beta-Kristallin very intense, reaction to sodium nitroprusside. This explains the negative reaction to sodium nitroprusside in senile cataract by more or less disappearance of the soluble protein substances. It will be the object of further, especially quantitative, investigations on the contents of albumoid of the normal and senile cataractous lenses, whether here the conversion of the crystallin lens into insoluble albumoid is increased, which, according to Moerner, is physiological to a certain C. Z. degree in the course of life.

Absorption of Traumatic Cataract.—Cusner, Brussels (*Trans. Belg. Oph. Soc.*, April 28, 1912), reports that while doing an iridectomy the lens was injured, producing a traumatic cataract and which disappeared completely without treatment.

M. D., trans by J. F. C.

CHORIOID

Macular Choriopetis. - Stuart, Charles C., Cleveland, Ohio State Medical Journal, May 15, 1912.) The writer quotes the opinions of many authoritive writers on this subject and reports two cases. In conclusion and summary he says: "I am inclined to the belief that there have been described many cases of coloboma of the macula lutea which were probably inflammatory lesions of that structure originating in the chorioid at that point; that local tuberculosis must be reckoned as among the causative factors in the destruction of this structure, and lastly, I would plead that eyes should have as careful examination among all people as is given to the care of the teeth in order that lesions of the macula and peri-macular

area may be earlier seen and treated, and thus not allowed to become the large, destructive areas which one sees now." M. D. S.

CILIARY BODY.

Tuberculous Cyclitis.—Leboucq, Gand (Trans. Belg. Oph. Soc., April 28, 1912), has analyzed five cases confined to the ciliary body, without iritic lesions, of tubercular origin.

The onset is sudden; there is slight pericorneal injection; center of the cornea faintly clouded; deposits on Descemet's membrane which become larger and larger, soon giving the classical picture of Descemetitis. At the end of two weeks the deposits begin to clear up and continues for several months. The deposits are due to tiny masses of cells thrown off by the inflamed ciliary body; these products are transformed into brown spots composed of grains of pigment.

Tuberculin treatment does not seem to influence this condition, M. D., trans. by J. F. C.

CIRCULATION.

RECURRENT RETINAL HEMORRHAGES OCCURRING IN THE YOUNG. WITH THE REPORT OF A CASE.—Davis, A. E., New York City (Arch. Ophth., September, 1912, XLI, 478), reports a case of retinal hemorrhages in a young man aged 22 years. No previous eye trouble, and physical examination was negative. Eye examination, Nov. 6, 1911, showed vision normal in each eye. Fundus examination showed: In R. E., a large sublyaloid hemorrhage extending across the lower part of the fundus. Small hemorrhage below and to nasal side of disk and one just above the disk. Veins surrounded by broad, white bands, extending from disk to periphery. Same white bands surrounded the arteries.

Left Eye: Two small hemorrhages, one in inferior nasal quadrant, the other in superior termporal quadrant. White bands surrounding veins and arteries, as in right eye.

Nov. 9 there was an extensive hemorrhage into right eye. Vision 20/100.

Tuberculin injection gave local and general reaction. Dec. 9, tuberculin injection given. Following day an extensive hemorrhage occurred into the vitreous of the left eye, and a small hemorrhage in the right eye. Dec. 8, the urine showed hyaline and granular casts. Later urine examinations showed slight albumen, excess of

indican and numerous casts. Blood tests normal. Dec. 17, an extensive hemorrhage occurred in the left eye. Vision, fingers at three feet. Small hemorrhage in right eye. Dec. 30, hemorrhage occurred in left eye, and further hemorrhages occurred until Feb. 11.

Injections of human blood serum were given in January, but did not check hemorrhages.

Patient was sent into the country and no further hemorrhages occurred. Vision in left eye increased, from counting fingers at 4 feet, to 20/200. Vision, right eye, 2/200, remained unchanged. May 9, V. O. D., 4/200; V. O. S., 20/40.

The author summarizes as follows:

- "1. The decided diagnostic reaction of the old tuberculin in very small doses on two different tests, and the equally positive therapeutic reaction to the new tuberculin, especially the flushing of the sclera following these injections, signify beyond question that tuberculosis was an etiologic factor.
- "2. The history of repeated attacks of indigestion before the present trouble, one so severe as to resemble an attack of appendicitis, and the numerous attacks of indigestion during the present illness, together with the presence of an excess of indican in the urine at the very outset of his hemorrhages, and the acute desquamatous involvement of the kidneys in the early part of his present trouble, make it equally certain, also, that auto-intoxication was a factor in the etiology.
- "3. Worry and anxiety over his studies at college may have played a minor role as a cause.
 - "4. Syphilis may be excluded.
- "5. This is the first time, so far as I know, that human serum has been injected to prevent the recurrence of hemorrhages into the retina; in this instance it seemed to have little or no influence in checking them. But Dr. Welch thinks the patient did not have a sufficient quantity of the serum injected; so the test cannot be regarded as final.
- "6. Neither absolute rest in bed, nor moderate exercise, appeared to bear any relation to the frequency of recurrence of hemorrhages into the retina in this case. If the patient is being sweated, or if the bleeding is extensive, he should be kept in bed for a few days at a time; otherwise the course to pursue in handling such cases is moderate exercise in the open air.
- "7. Perivasculitis was a most pronounced feature of this case, together with the retinitis proliferans, showing a diseased condition of the retinal vessels, more marked in the veins. This decided peri-

vasculitis obtains most often in cases due to syphilis, but in the present case we are safe in excluding syphilis.

- "8. The hemorrhages in the present case seemed to come from the retinal veins and arteries, and not from the chorioidal veins, as seen by other observers. (Zieminski).
- "9. The patient's blood pressure and blood tests were normal throughout.
- "10. All treatment seemed of little avail in checking the hemorrhages, though I am inclined to give the tuberculin injections, the open-air treatment, and the general hygienic management of the case the chief credit in securing so good a result thus far obtained."

W. R. M.

EMBOLUS OF THE ARTERIA C'ENTRALIS RETINAE.—RUBERT. (Wien. Med. Wochensch., June 1, 1912.) Histological examinations proved conclusively that there exists a true form of embolus of the central artery of the retina. The cherry red spot of the macula is caused by the shining through of the chorioid. The opacity of the retina is brought about by an edema of the papilla first, and later by a degenerative change in the nervous elements. J. G.

Anglosclerosis of the Retina an Important Differential Diagnostic Symptom.—Deyl, Prof., Prag. (Wien. Klin. Rundschau, Aug. 25, 1912.) If the pressure, that must be applied to the eyeball, in order to bring about normal pulsation in the papillary arteries, is to be increased, the wall of the blood-vessel may be considered more rigid in consistence, but if pulsation in the retinal arteries can be produced by lighter pressure than normally, then the blood pressure is either diminished or the structure of the vessel wall is pathologically changed.

The close relationship between retinal angiosclerosis and cerebral angiosclerosis makes arterial hypertension in the eye, an important diagnostic symptom in various cases of paralysis of the eye muscles, in intraocular neuritis and in choked disc. These pathological changes can be produced by serious cerebral disease or by arteriosclerosis.

In cases of hemorrhagic glaucoma, where transilluminatives cannot be applied, the differential diagnosis between hemorrhagic glaucoma and intraocular tumor can be made by examining the arterial tension in the other eve.

J. G.

CONJUNCTIVA.

TREATMENT OF GONORRHEAL CONJUNCTIVITIS IN THE ADULT.—
J. STROUD HOSFORD and G. BROOKSBANK JAMES, London (Journ. Ophth. and Oto-Laryn., April, 1912). The authors place the patient in bed to remain there until all danger is passed. A low diet is prescribed and a constant douche of 1 to 15000 Potassium Permanganate day and night is their only local treatment. The authors state that where the patient is seen by a specialist at a dangerously late stage, eight days' continuous irrigation will be found sufficient to bring the case completely under control, provided the cornea is not affected when the surgeon is called in. The authors condemn the use of all silver preparations and state that "it has always appeared to us that this treatment would be justly condemned if adopted by any modern surgeon in urethral gonorrhea, and that it is essentially unscientific and unpractical." G. I. H.

Causes of Ophthalmia in the New-Born.—Weekers (Le Scalpel, No. 39, March 24, 1912), admits that there are two varieties of conjunctivitis in the new-born; the first is due to the gonococcus, and the other variety in which trachoma corpuscles are encountered, can only belong to this latter disease. The preventive treatment consists in scrupulous cleansing of the genitalia of the woman before confinement and in the employment of Crede's method.

The curative treatment consists in abundant lavage with potassium permanganate and the frequent instillation of argyrol or protargol. Rarely the author uses nitrate of silver, but only when the two other remedies have failed.

M. D., trans. by J. F. C.

TREATMENT AND PREVENTION OF BLENNORRHOEA OF THE NEW-BORN.—STRAUB, M., PROF. (Feestbundel, Hector Treub, 1912), begins with the history of the last century. Some 100 years ago, as will be found in the book of J. Beer, the connection between Ophthalmia neonatorum and Gonorrhoea urethrae and vaginae was yet unknown. The vitiated air, which had become bad on account of the lochiae of the mother, and the spilled sour milk, and the dirty diapers were regarded causes; even more harmful was the strong light and the cold water, which was poured over the sweating head during the christening. The washing of the children during the night in artificial light was considered the most dangerous of all. Beer considers the prognosis very unfavorable. In very happy cases a weakness of the eyes remains for life.

Radius writes 25 years later (1839): "The bulb becomes easily endangered; softening and ulceration of the cornea, prolapse of the iris, synechia and staphyloma occur; shrinking of the bulb through bursting of the cornea or ulceration is not rare. Some call this highest degree Ophthalmia gonorrhoica (Eisenmann), because they believe it can be caused through gonorrhoic virus of the mother." Other causes are the common use of sponges and towels, the crowding of children in a small space, the looking in the fire of the hearth, before which the children are washed, as f. i. in Paris. The ordinary daylight, which some accuse, does no harm, if not too strong, and the advice of some to paint the window glasses green of the foundling hospitals, does not need to be followed. Mackenzie's book gives a good idea of the condition of Ophthalmology at its date. In the 4th edition (1854) he writes: "There is reason to believe that this disease is, not unfrequently, an inoculation of the conjunctiva by leucorrhoeal fluid, during parturition," and "that the purulent ophthalmia of infants, in its worst form, is the result of the application of gonorrhoeal matter, during the passage of the head through the vagina, is generally admitted. He expresses himself about the influence of the light, as accepted by his predecessors: "Exposure to the light, to the heat of the fire, or to the cold draught from the door, are all likely enough to have an injurious influence on the eves of the new-born infant; and, accordingly, some have been led to attribute the purulent ophthalmia which so frequently shows itself after birth to these causes." Basta.—For the first time we find the prognosis favorable. "It is melancholy," says M., "to reflect on the frequency of destroyed vision from this disease, especially as the complaint is, in general, completely within control, if taken in time and properly treated. If the disease is recent, and the corneae are only free from ulceration, and from purulent infiltration, how violent so ever the inflammation and profuse the discharge our prognosis is favorable."

In the same year A. von Graefe published his treatment. He also gives a favorable prognosis. Among hundreds of cases he lost no eye, when it had come to him with an intact cornea. He complains that often the children are brought too late; this causes some 40 eyes and 15 persons to become blind annually in Berlin. Does this change in the prognosis coincide with a change in treatment? Nitrate of silver is strongly recommended by English and German writers. Not yet by Beer. He uses locally tinct. of opium, more rarely sulfate of copper. Radius mentions N. A. among other astringents. Rute in 1846 recommends the 2% sol. of N. A., etc.

Mackenzie describes carefully the treatment: "As it is of the utmost importance to remove the purulent discharge from time to time in the course of the day." He uses a 1 to 4000 sol. of corrosive sublimate, adding a little sal ammoniac, 3 or 4 times, or oftener in the 24 hours; to repress the secretion a 0, 4/2% sol. of N. A. is the most useful.

V. Graefe uses the lapis mitigatus, so that an escharand slough is formed. The new ophthalmic school, which dates from V. Graefe, has added much water to its lapis, uses after many changes the 2% sol. We have learned that it is better not to begin directly with the silver treatment. It is sufficient during the earlier days that the nurse cleanse repeatedly and the physician twice irrigates the conjunctival sac. When the secretion shows no further diminishing the causticum should be used. Some used a 1 to 1000 sol. of N. A. (Burchardt) or non-antiseptic or astringent solutions of permanganate of potassium (Kalt) or physiologic salt solutions (Lamhőfer). Experience has not taught the superfluity of the N. A.; still we learned that the cleaning is of much more importance in the treatment of the blennorrhoe, as was thought previously. Our means for cleaning the eyes are much better than of our predecessors. Our aim is also higher, namely the entire transparency of the cornea. We cannot do without the N. A. sol.—not in the beginning; here a weak sol. of permang. of pot. (f. i. 1 to 1000) will do much good.

Credé's method (1884) has had a very great influence. After tying of the cord the child is washed, put in the bath and the eyes cleaned with clean cotton dipped in clean water, so that the evelids become entirely clean. Before the child is swathed each eye is opened a little with two fingers, so that the cornea becomes visible and one drop of a 2% sol. of N. A. is put in the ocular slit. seems apparent that the cleaning has attracted more attention than previously and that the eyes are more cared for. The drop of N. A. would be a formality. It would be possible that this new cleaning would have the wished-for effect even without the N. A. Already in 1841 Piringer wrote: "Washing the eye with water directly after contact with gonorrrhoic secretion seems to prevent the infection and following blennorrhoea," and further, "through quickly washing the eyes with clear water, directly after birth, one could probably prevent the blennorrhoea in a child born from a mother suffering with gonorrhoea."

If only the careful cleaning were the essential of Credé's method, then the numerous other chemicals would have had more success, while in reality none has been able to supplant the N. A. It

does not do it by its action on the conjunctiva or by killing the gonococci present in the conjunctival sac, as it reaches a too small part of the conjunctiva, and it is even probable that it becomes neutralized too soon by the Na Cl. of the tears. But it seems probable that the contagium directly after birth is only still limited to the skin of the lid borders, as the child has not yet opened its eyes. We may well suppose that N. A. can sufficiently disinfect the skin and borders of the eyelids with the method of Credé. This would be the scientifical defense of the method and would establish harmony between experience and science. N. A. is not fully harmless for the cornea and conjunctiva. Straub saw during the last year two cases with remarkably much necrosis, where he suspects the N. A. to be the cause. It would be a step in advance, when the N. A. could be exchanged for some other remedy which would have absolutely no harmful effect on the cornea. We think here first of Permang. of Pot., irrigations a few times daily of a 1 to 3000 sol. have proved so satisfactorily, Kalt (1884), Th. Leber (1895) in the treatment of children and grown-up people. Straub's assistant, Smit, demonstrated its innocuousness in sol. 1 to 500. Its killing properties against staphylococci were about zero. This does not prevent that irrigations with a 1 to 1000 sol. have an excellent influence in the treatment of blennorrhoea.

Those who use this remedy may have the idea to use it for washing the eyes of the new-born to prevent the Blennorrhoea neonatorum. But as it is no antisepticum—at least does not kill Staphylococci—and N. A. is an excellent one, one hesitates to change the routine treatment.

However, the innoxiousness of the Permang. of Pot. invites experimentation.

E. E. B.

Symblepharon After Corneal Ulcer.—Brückner, A. (From the clinic of Prof. E. Krückmann in the University of Koenigsberg. Zeit für Aug., 27, I, June 1912, p. 505), reports 3 cases which, with 2 similar cases of Saemisch and Scimemi, showed that corneal ulcers may lead to adhesions with the corresponding points of the palpebral conjunctiva if this has an epithelial defect and if the adhering parts are immobilized. This may be brought about by protrusion of the globe, e. g. from inflammatory diseases of the orbit, swelling and spasm of the lids, entailing permanent closure of the lids. One of B.'s cases demonstrated that even the immobilization of the eye and lids during a night's sleep may effect an agglutination with subsequent symblepharon. Almost always the cornea alone is affected,

less frequently the conjunctiva. Therefore the operation of these cases of symblepharon is generally easy. The operative separation of the bridge suffices, as the re-established movements of the eyeball and lids prevent a recurrence. A transplantation on the wound surfaces probably may be necessary only in exceptional cases.

C. Z.

ON THE SO-CALLED PARINAUD'S CONJUNCTIVITIS.—ROSEN-HAUCH, EDMUND (From the eyeclinic of Prof. Wicherkiewicz in the University of Krakau. Arch. für Aug., 72, p. 162), reports 4 cases which presented the clinical symptoms of Parinaud's, conjunctivitis, viz. unilateral granulations of the conjunctiva, swelling of the lids, preauricular and submaxillar glands of the same side, rise of temperature, general malaise, and the possibility of a contagion from animals. The etiology in these cases, however, greatly differed. Two were cases of chronic tuberculosis of the conjunctiva, corroborated by the histological examination, the experiment on animals and the biological reaction. The third case showed acute conjunctivitis, produced by the pneumococcus (Frankel-Weichselbaum), and the fourth a chronic trachomatous process with exacerbation of the inflammation from a secondary infection by Koch-Weeks bacilli. Recent investigators on the etiology of Parinaud's conjunctivitis assume a connection with tuberculosis, others a specific microbe, and still others demand further researches, without excluding the possibility of a connection of this disease with tuberculosis.

R.'s object was to demonstrate on these cases that the clinical symptoms of so-called Parinaud's conjunctivitis may have very different causes. Although he does not deny the possibility of a connection with tuberculosis or a specific, so far unknown, infection, he emphasizes that today the term Parinaud's conjunctivitis signifies not an exactly determined disease, but a complex of clinical symptoms from which recent and future investigations may perhaps separate some etiologically different affections. C. Z.

CORNEA.

TREATMENT OF ACUTE STAPHYLOMA OF THE CORNEA.—THE USE OF ADRENAL GLAND EXTRACTIVES.—PONTIUS, PAUL J., Philadelphia, Pa. (N. Y. Med. Journ., Sept. 28, 1912). The active principle of the adrenals has been used for the relief of pain in keratitis and of tension in acute glaucoma. It has been found to reduce the

Cornea. 221

formation of aqueous humor in animals. Its influence has been found to be due to the rise in metabolic activity engendered directly in the muscular elements of the arterioles; the calibre of the latter being reduced, the volume of blood plasma admitted to the ocular structures is also reduced. The veins which carry off the blood from these structures are not influenced, however, and the intra-ocular tension is relieved merely because more fluid leaves the eye than is supplied by the arterioles.

On account of this physiological action, the writer was induced to use epinephrine in acute staphyloma of the cornea, so frequently seen in ulcerative keratitis, instead of puncture and pressure bandage, or later doing a partial excision of the cornea. The histories of six cases are given; in all the effect of the adrenaline was very satisfactory. There was no specific effect upon the corneal tissue, but staphyloma of the cornea was reduced by constriction of the arterioles, thus relieving pressure in the lymph areas and thus causing reduction of the intraocular tension and permitting the cornea to resume its normal form.

C. H. M.

KERATOCONUS. REPORT OF A CASE.—LE FEVER. C. W., Philadelphia. (Ophth. Record, February 1912). White, male patient, age 50 years, with no history except one attack of rheumatism. Poor vision noticed when he was forty. The case seems unusual in the lateness and rapidity of its development; also in the low position of the apex of the projection.

G. I. H.

ETIOLOGY OF KERATOCONUS.—SIEGRIST (Zeitschr. f. Chir., Bd. 116), has had published from his clinic a study on the Hydrodiaskop und Keratokonus (Klin. Monatsbl. f. Augenh. Bd., 44, Beilageheft S. 93). This explains how he saw 9 cases during the last year.

The cause of Keratoconus is unknown; it is not a higher intraocular tension. It is found in both sexes about in the same proportion. Siegrist found that these patients are mostly gracile and often very nervous. Often their skin is dry and they complain of their hair falling out. Privatdozent Dr. K. Kottmann made blood examinations. Chlorosis and anaemia are absent; Haemoglobin normal or hypernormal. The number of red blood corpuscles is normal, sometimes increased. In all cases but one the lymphocytes are increased 40—58% as to 25% in the norm. In all cases but one the clotting time of the blood has increased. With Kottmann's Koagulo-Viskosimeter normal blood begins to clot after 18 minutes and is finished after 23 minutes. This clotting begins with the Keratoconus 222 Cornea.

patients much earlier—in one patient after 3 minutes—and is finished also much earlier.

Such a quickening of the clotting, dry skin, diminished sweat secretion, falling out of the hair, a. s. is found with Hypothyreoidismus. It is uncertain if the thyreoid functionates insufficiently or if disturbances in the function of the other glands with internal secretion are the cause. Most Keratoconus patients showed struma formations—but these came out Bern, where struma is endemic, except one case. However, it must not be said that this Hypothyreoidismus is the direct cause of the Keratoconus. The same underlying factor which leads to Hypothyr. could occasionally be the cause of Keratoconus.

Should Hypothyreoidismus be a directly actiological factor, then it cannot be the sole factor, as not all patients with Hypothyr. suffer from Keratoconus. Another factor should also be present. Perhaps astigmatism may have something to do with it.

E. E. B.

Keratitis Punctata Superficialis (Fuchs) and Its Relation to Menstrual Disturbances.—Bosser, Prag. (Wien. Klin. Rundschau, Sept. 29, 1912). The author is of the belief that this form of corneal affection is due to an anomaly in nutrition produced by disturbed secretion of the ovaries. The disturbed secretion of the ovaries causes an increased irritability of the vasoconstrictor nerves, and this, again, brings about an increased diapedesis between the corneal layers. In support of his theory he cites the relationship between anaesthesia of the cornea and diminution of intraocular tension. He is of the opinion that the internal glandular secretion plays an important role in the etiology of keratitis superficialis.

J. G.

CLINICAL AND STATISTICAL REMARKS ON SERPENT ULCER OF THE CORNEA, WITH ESPECIAL CONSIDERATION OF INTRAOCULAR TENSION.—GUNNUFSEN, TH. (From the eyeclinic of Prof. Schiötz in the University of Christiania. Klin. Mon. für Aug., 50. I, June 1912), reports on 157 cases out of 2223 stationary eye patients, from 1906 to 1910. Serpent ulcer was most frequent at the time of working in the fields and woods, i. e. between June and August. One hundred and nine stated that the ulcer developed after an injury. Almost constantly the serpent ulcer occurred in eyes previously diseased. One hundred and twenty-nine had an affection of the tear sac and chronic conjunctivitis, 13 had chronic conjunctivitis, blepharo-conjunctivitis or hordeolum.

Cornea. 223

G. calls attention to one symptom, observed by Schiötz, so far little heeded, but very important for treatment, viz. the rise of intraocular tension. The measurements, with the tonometer of Schiötz, of 101 cases revealed the tension increased in 59, normal in 37, lowered in consequence of perforation in 5. G. ascribes the increase of tension to the obstruction of the outlets of Fontana's space by fibrin and round cells, which are always found in the anterior chambers of eyes, affected with serpent ulcer, analogous to the increased tension after discission of soft cataracts and the experimental injections of India ink by Hamburger. G. emphasizes that in all cases that had been treated with atropin, the tension was above normal (25 mm. Hg.), and that only in these the dangerous rise of intraocular pressure was encountered. He therefore says the fear of posterior synechiae ought not to indicate atropin in serpent ulcer, where the risk by mydriasis and the thereby greater predisposition for secondary glaucoma is of more importance.

For anesthesia 2 per cent holocain is instilled, never cocain, because it promotes necrosis of the epithelium and disposes by its mydriatic action to increased tension. Nitrate of silver ½ per cent and argyrol 10 per cent, from three to six times daily, serve as antiseptics, with frequent irrigations with 2 per cent boric acid solutions and moist heat. The main remedy is galvano-cauterization, repeated if the least tendency to progression arises, in one case 13 times. If hypopion fills more than one-third of the anterior chamber, it is evacuated by peripheral section with the lanceshaped knife, generally followed by iridectomy (in 43 out of the 157 cases). Saemisch's section has been entirely discarded. The tear passages receive the greatest care. In dacryocysto-blennorrhoea the sac is at once extirpated, in 30 out of 129 patients, in stenosis Bowman's probes are used, never irrigation. The prognosis in Norway, an extended country with only one eye clinic, is rather bad. The final outcome of 137 cases was: 23, V=5/20, 40, V=1/60, 52, V=1/60; 22 eyes were later on enucleated. G. recommends the model 1909 of the tonometer of Schiötz with a crescentic base for the cornea. It may be obtained for about \$18.00 from Jacobsen's C. Z. Electric Works, Pilestraedet, Christiania.

ANNULAR ULCER OF THE CORNEA.—TERLINCK, BRUSSELS (Trans. Belg. Oph. So., April 28, 1912), reported a patient who had dilatation of the lacrimal sacs for several years and who developed an acute attack of dacryocystitis with profuse suppuration, following which an annular corneal ulcer appeared, touching the limbus. The

224 ('ornea.

ulcer, of variable depth, did not show serpiginous characteristics; there was no hypopion. The etiological cause proved to be the pneumococcus, presenting some of the characteristics of the mucous streptococcus. Resulting vision, 20/50. A similar affection in the other eye has resulted in a large annular leucoma with staphylomatous deformity of the pericorneal zone of the cornea and only 1/200 vision.

M. D., trans. by J. F. C.

INFECTIOUS SUPPURATIVE KERATITIS.—LA MOTHE E., Chicago (Jour. Ophth. and Oto-Laryn., May, 1912). The author recognizes four distinct forms of this type of keratitis, as follows: (1) the typical serpiginous ulcer; (2) the atypical serpiginous ulcer; (3) the marginal ulcer of the cornea; (4) the ulcus rodens. La Mothe discusses the etiology, pathology and treatment in detail. He reviews the clinical and bacteriological observations up to date.

G. I. H.

MARGINAL DYSTROPHY OF THE CORNEA OF A YOUNG MAN .-Junius, Dr., Coeln (Zeit. f. Aug., 28, July, 1912, p. 43), describes a very rare symmetrical affection of the cornea of a man, aged 29, who as a soldier in Africa had suffered from scurvy and malnutrition. The upper margin of the cornea was opaque, had the aspect of an avascular pannus, with very minute vessels, only detectable with the loupe. The opacity, 2 mm. wide, was irregular and the cornea thinned and slightly bulging. Its central border was about 1 mm. wide, saturated white, as if calcified, and indented. The corneal microscope showed that the affection occupied the superficial portion of the parenchyma with smooth surface. V R=1/30, V L=4/8, due to inverse astigmatism of 5 D. The affection resembled the marginal sclerosis and atrophy of the cornea, described by Fuchs, and the chronic peripheral furrow keratitis, described by Schmidt-Rimpler. J. considers it as a degeneration, which probably will progress. Terrien observed in a similar case an essential improvement from producing a scar with the thermo-cautery. A C. Z. colored plate illustrates the condition.

REPORT OF SIX CASES OF DEGENERATION OF THE CORNEA IN THE SAME FAMILY (NODULAR KERATITIS).—ROY, DUNBAR, Atlanta (Arch. Ophth., Sept., 1912, XLI, 490), reports six cases of nodular keratitis occurring in one family, mother and five children. The clinical symptoms were most marked in the mother and differed in degree, according to the age of the patient, being

hardly perceptible in the youngest child. The author refers to the diversity of nomenclature under which such cases have been described and believes they could all be designated as "Family Degeneration of the Cornea," as described by Fehr and Fleischer. In the author's cases there was an absence of all inflammatory signs and tubercular tests were negative. The article is illustrated.

W. R. M.

GENERAL DISEASES AND THE EYE.

PRACTICAL POINTS IN THE SURGICAL TREATMENT OF EXOPH-THALMIC GOITER.—OCHSNER, A. J., Chicago (Journ. of Ophth. and Oto-Laryn., Feb., 1912). The author discusses a number of practical points on this subject under the following heads: (1) Indication for Operation.—Surgical treatment should be employed in every case which does not recover permanently upon treatment with rest, hygiene, diet and the use of a few harmless remedies, and possibly also the treatment with serum, provided, first, that the patient is not suffering from temporary exacerbation of the hyperthyroidism, and, second, that the condition has not existed sufficiently long to leave the circulation and the nervous system of the patient in an absolutely hopeless condition. (2) Margin of Safety. -It may be that one entire lobe and a part of the other must be removed in order to cure a patient, but the latter's condition may make it wise to remove only one lobe or possible to ligate one or two vessels, and later to add the remaining treatment, as the patient's condition may indicate. (3) There is practically always a sufficient amount of serum secreted to indicate the use of good drainage. (4) Traumatism Increases Hyperthyroidism.—It is extremely important to guard against violence in connection with the operative manipulations. (5) Anesthesia.—One-fourth of a grain of morphia and one one-hundredth of a grain of atropia is administered hypodermatically half an hour before the operation is begun, and the patient is then thoroughly anesthetized with ether by the drop method, and the head of the table is elevated so that the body lies at an angle of 45 degrees. The operation can be completed without the further administration of ether. This makes the use of ether perfectly safe, and the patient's pulse regularly improves during the operation. The jaw must, however, be held forward by a reliable assistant during the entire operation in order not to permit the tongue to obstruct respiration by falling into the larynx. (6) The necessity of avoiding injury to the recurrent

laryngeal nerve, to the parathyroid glands and the trachea is fully established. (7) Supply of Liquid.—Hot water taken by mouth, or normal salt solution given as an enema by the continuous drop method. (8) After-Treatment.—Give patients definite instructions to avoid overwork, excitement, alcohol, tobacco, tea and coffee, late hours, social and business worries, absolutely and permanently, after recovering from the operation, and to select a diet largely composed of milk, cooked vegetables and fruit. (9) Youthful Patients.—The tremor, the muscular weakness, the nervous excitability, some tachycardia and many of the minor symptoms are often present. There may even be present a very slight degree of exophthalmos, and still these patients will almost invariably recover without operation with physical, mental and emotional rest, diet composed largely of milk, cooked vegetables and fruit, favorable hygienic surroundings and absence of conditions which might cause G. I. H. nervous excitement.

Hyperthyroidism—Its Treatment.—Macdonald, W. J., St. Catharines, Ont. (Can. Pract. and Review, August, 1912). In reviewing the various symptoms of this disorder, the author refers to exophthalmos as second in the chain of symptoms which make up the composite picture. He states that it is readily distinguishable in at least 50 per cent. of all cases, but that in many cases eye symptoms may be entirely wanting. Ocular symptoms may be present in varying degrees from a slight widening of the palpebral fissure to where the dislodgment of the eyeball seems imminent. In later stages, the protrusion of the eyeball may be so great as to almost prevent closure of the lids. The exophthalmos may vary with the tachycardia from the same cause, according to some authorities, the rise and fall of the thyroid secretion.

The direct cause of exophthalmos is believed by some to be due to an increase of orbital fat, others hold that it is accounted for by a spasm of Müller's muscle, while others consider a weakness of the orbicularis to be at fault. Associated with exophthalmos, Stellwag's sign of staring without winking is an important feature. Dalrymple is credited with first observing the apparent widening of the palpebral fissure, von Graefe the fact that in looking downwards there is usually a lagging of the upper lid, and Moebius that in severe cases there is a marked insufficiency of accommodation.

F. T.

ON A CASE OF PARALYSIS OF THE FOURTH NERVE IN THE COURSE OF TYPHOID.—KUMMAGAI, N., Tokyo (Centralbl. f. prakt. Aug.,

36, Sept., 1912, p. 262), reports a case of paralysis of the right fourth nerve in a man, aged 28, which developed at the end of the third week of typhoid. Prism 9°, base downwards and outwards, fused the double images. Under aspirin, 1.50 daily, and subcutaneous injections of pilocarpin 0.1, every other day, the affection healed within 6 weeks.

Literature contains only one case of paralysis of the fourth nerve in typhoid, published by Runeberg. The pathogenesis of the ocular palsies in typhoid is difficult to explain. It may be of central origin, as Brown found softening in the nucleus of the abducens, or in consequence of meningitis, like in Boden's case, or due to peripheral neuritis, which is caused primarily by typhoid toxin, like most diphtheritic paralyses. In typhoid also occurs a kind of waxy degeneration in various muscles, which occasionally may affect an ocular muscle. As in this case, the typhoid took a light course, no brain symptom being present, K. assumed a peripheral neuritis.

THE OCULAR LESIONS OF POLYMORPHO'S ERVITHEMATA. TERSON, Paris (*Trans. Belg. Oph. Soc.*, April 28, 1912), says that of the polymorphous erythemata, the papular, nodular, macular and bullous all produce distinctive ocular lesions.

The papular variety shows enormous wheals, symmetrically occupying the exposed portion of the globe; these violet colored elevations appear and disappear in a few days without leaving any trace.

In the nodular erythema the nodosities are still more dense, are much slower in disappearing, but easily return, in this respect resembling the original malady.

The author reported a case of nodular crythema attacking the eyebrows and eyes of a tubercular subject. It is well known that nodular crythema is frequently encountered as an early sign, or is concomitant to tuberculosis, and on that account should not be overlooked. The author also cited another tubercular case in which sclerosing keratitis appeared, and without any other ocular lesion, although the patient had crythema maculosa.

In the vesicular form, enormous bullae are often produced upon the mucous membranes (mouth, lips and tongue) and upon the conjunctiva. This affection is generally cured without corneal complications and without retracted conjunctival cicatrices. He tells us we should be careful in making a differential diagnosis between the bullous form, benign to the eye, and pemphigus which is serious, terminating in symblepharon and blindness. The author states that these diverse ocular manifestations were but little known before his works, which were published fifteen years ago, and the thesis of Beaudonnet (1894), which had inspired him. He mentioned other writings which have since appeared and concluded by mentioning a case of acute bilateral glaucoma in which there appeared during the first days, successively to each eye, a crop of recurring nodular erythema.

M. D., trans. by J. F. C.

Two Cases of Pempingus Affecting the Eyes.—Santos-FERNANDEZ, JUAN (Crónica Médico-Quirúrgica de la Habana, July 1, 1912. In almost fifty thousand cases of eye troubles the author has only seen three cases of pemphigus of the eye, thus confirming Pergen's and Lagrange's opinion of the extreme rarity of this disease. Two cases are described, the first of a child a year and a half old, suffering from extreme emaciation and whose whole body was covered by pemphigi. The lids were closed and bled when opened, but the cornea was still somewhat clear, the photophobia being very intense. The child died shortly after. The second case was of another child, six months old, who also had pemphigi in the whole body. In the eyes the disease begun with blisters in the lids, which invaded the eyes themselves, producing cicatricial ectropion and suppurative keratitis, which destroyed the cornea completely, the child, unfortunately, being still alive. F. M. F.

THE EYE IN LOCOMOTOR ATAXIA.—FUCHS, ERNEST, Vienna (Wien. Klin. Woch., April 4, 1912.)

The following are important diagnostic features between syphilis and locomotor ataxia:

- 1. Frequent changes of ocular symptoms, speak for syphilis.
- 2. Myosis and reflectory pupillary rigidity is found more frequently in tabes whereas total rigidity of the pupil or dilatation of the pupil with paralysis of accommodation is more frequent in syphilis.
- 3. Simple atrophy of the optic nerve is frequently found in locomotor ataxia; the nerve becomes pale at the beginning of the disease, whereas in syphilis paleness begins after visual disturbances have been in existence for some time, because here a slight inflammatory process preceded the atrophy.
- 4. A good and prompt response to antisyphilitic treatment speaks for syphilis, and against tabes.

 J. G.

TUBERCULAR AFFECTION OF THE UVEA.—FLEISCHER (Wien. Med. Woch., Feb. 3, 1912). A tuberculin injection will at the present time show numerous cases of disease of the iris and chorioid to be due directly to tuberculosis, where formerly the exact nature of the cause of the affection could not be determined.

Small doses of 0.0001-0.0005 are sufficient. In some cases of chronic iridocyclitis or disseminated chorioiditis where the tuberculin test was positive, no other focus of tuberculosis could be found, but an X-ray examination showed the presence of a deep seated tubercular focus in the lungs or enlarged bronchial lymph nodules.

J. G.

RETINAL LIPARMA IN SEVERE DIABETES.—DARLING, C. G., Chicago (Arch. Ophthal., July, 1912, XLI, 355), describes a case of lipaemia of the retina occurring in a male aged 48 years who had a severe diabetes. The fundus was of normal color, normal retina (no hemorrhages), optic disks clearly outlined, vessels not tortuous, moderately dilated, and looking like waxy, light pink lines on a red back ground of normal color.

The author refers to the literature on the subject of retinal lipaemia. The article is illustrated and a bibliography is appended.

W. R. M.

RELATION BETWEEN CERTAIN FUNCTIONAL AND ORGANIC EYE TROUBLES AND INTESTINAL AUTO-INFECTION OR AUTO-INTOXICA-TION.—WOODS, HIRAM, Baltimore (Ohio State Medical Journal, July 15, 1912). The author uses important contributions of several investigators of this subject and describes a group of illustrative cases. "It is believed that there have been traced to intestinal putrefaction not only chorioiditis and various forms of uveitis, but functional and paretic lesions of the ocular muscles, chronic hyperemia of the conjunctiva, phlyctenular lesions, hemorrhagic retinitis, retro-bulbar neuritis." He says that in cases where it is difficult to get the full or expected effect of a cycloplegic, he has succeeded in getting this effect by a purge and limiting the diet for a few days. He says, "My own conclusion as regards eye troubles is about this: I do not think we can start with an intestinal putrefaction proved by indicanuria, and trace definitely and scientifically pathological steps to an eve lesion. I believe this much is true: We can eliminate usual causes of a great many eve diseases, and soon be satisfied that we are dealing with a toxin. We reach this conclusion by resemblance of eve symptoms to those from infectious

diseases. We go further and find associated symptoms strongly suggestive of intestinal intoxication. What the toxin is or if it results from putrefaction of food or bacteria in the intestine, cannot be said. The vast majority of these cases show excessive and persistent indicanuria. Treatment based on its presence, and associated intestinal symptoms, results in the relief of the eye troubles. Treatment must, of course, be largely left to the internist. Regulation of diet seems his chief reliance, with such medicines as purgatives, tonics, and the various foods or drugs depending for activity upon the lactic acid bacillus. It is worthy of note that in Herter's experiments injection of cultures of this bacillus was followed by reduction of indol formation. Another phase of the subject is full of interest; the influence of intestinal toxemia upon eye diseases not caused by it."

GLAUCOMA.

OPERATIVE TREATMENT OF GLAUCOMA.-JAMES, BROOKSBANK, AND HOSFORD, STROUD, London, Eng. (Report of the July, 1912, meeting of the Ophthal. Soc. of the United Kingdom, Brit. Med. Journ., July 11, 1912). The writers recalled a description by Mr. James in 1909 of a method of operating upon all cases of glaucoma by cutting through the sclera from without, after having turned down a preliminary conjunctival flap to cover over the linear wound. Since then the operation had been somewhat elaborated by turning out a piece of sclera by the following method: The conjunctiva having been made anaesthetic, and a few drops of adrenaline solution instilled, a large conjunctival flap was turned downwards to the corneal margin. All further bleeding was now stopped by adrenaline. An incision was next made at the limbus, concentric with the corneal margin, by cutting with the edge of the Graefe knife near its tip, so that the lips of the wound were perpendicular. The paring was proceeded with until a fair depth of wound had been obtained. A small puncture was then made, and the aqueous allowed to evacuate itself very slowly. A blunt-pointed Stilling knife was now inserted into this opening, and the wound enlarged throughout its extent. A moderately large iridectomy was then made in the usual way. The operator then proceeded to turn out a piece of sclera from the upper lip or the angles of the wound, endeavoring to ensure that some of the lining membrane was attached to its under surface. This was laid flat on the surface of the adjoining sclera, and held in position by the conjunctival flap being stroked over its surface. The special points in the operation were: (1) The fact that the edges of the scleral incision were perpendicular, not slanting as made by the Graefe or the keratome. (2) It would be noticed that the iris fell backwards much more readily than in an ordinary iridectomy, and did not require the introduction of another instrument into the eveball to replace it. (3) The scleral flap could be cut by one of two methods. In some of the cases this was done by means of a punch. This, however, was somewhat uncertain, and occasionally punched a piece of sclera clean out, which was not desirable. (4) Another method was to turn outwards by means of scissors or knife a strip from one or both angles of the wound. If this plan were adopted it was better to outline a strip by marking out its limits almost through the whole thickness of the sclera prior to opening the anterior chamber, as the relaxed state of the tissues when the aqueous had escaped rendered the proceeding more difficult. Mr. Hosford said he had carried the method out in all his cases of glaucoma except one, and that he did on the periphery of the iris. Whatever method was employed there was a predilection on the part of the sclera to close up. Ten out of 38 cases so treated closed up. Of the 38, 28 leaked by first intention and 8 of the remaining 10 leaked secondarily. The operation was simple. C. H. M.

Woch., July 27, 1912). The normal tension of the eye as measured with a Schiötz's tonometer is on the average 20 mm. Hg. In patients suffering from glaucoma the blood pressure is often increased; but there are also cases of glaucoma without increased blood pressure, and again cases of increased blood pressure without glaucoma.

Strophanthus had long ago been recommended to be used in glaucoma in addition to local measures. During the onset venesection, by means of which first the blood pressure and later the tension is diminished, is also recommended. In glaucoma simplex the greatest decrease in the tension takes place after venesection in from six to twenty-four hours, and in inflammatory glaucoma in from twenty-four to twenty-eight hours.

J. G.

WESSELY (Wien. Klin. Rundschau, March 31, 1912). The author produced glaucoma in young rabbits by discission of the lens. The swollen masses of the lens closed up the angle of the anterior chamber. In spite of this, however, the infiltration between the anterior and posterior chambers did not cease.

The same author further proved, by animal experimentation, that eserin does not diminish tension in a normal eye, but on the contrary, it somewhat increases it.

The therapeutic effect of eserin upon a glaucomatous eye he explained by the fact that the angle of the anterior chamber becomes free on account of the myosis produced by the drug.

Amyl nitrite, antipyrin and caffein while dilating the peripheral blood vessels, have a tendency to increase the tension in the eye; alcohol, on the other hand, produces a diminution of the arterial as well as of the ocular tension.

J. G.

RESULTS OBTAINED WITH SCHIÖTZ'S TONOMETER ON NORMAL AND GLAUCOMATOUS EYES .- TOCZYSKI, FRANZ (From the eyeclinic of Prof. E. Machek in the University of Lemberg. Klin. Mon. f. Aug., 50, I, June, 1912, p. 727), examined, with the tonometer of Schiötz, 70 normal eyes, 6 patients with simple glaucoma, 20 with inflammatory, and 3 with consecutive glaucoma, before and after operation, and gives the results in tabular form. In concordance with the figures of Stock, T. found the normal tension between the limits of 12 and 27 mm. Hg. Age and time of the day had no influence. T. warns against the excessive use of holocain for tonometer examinations, as it causes disagreeable and disturbing photophobia and lacrimation, with the tendency of the patient to forcibly close his eyes. Holocain seems to elicit an enormous mechanical irritation of the lacrimal glands. In individuals of middle and higher ages repeated tests with the tonometer seemed to produce an absolute or relative hypotony, even if the lightest weight, 7.50, was used. Apparently the weight causes a certain insufficiency of tension, due to inadequate regeneration of the fluid, pressed out of the eye. A similar observation was made by instillation of 1-1000 adrenalin. This contracts the ocular vessels and interferes with their function of forming the intraocular fluid.

T's. tonometric observations on glaucomatous eyes were: 1. Not only the tension of inflammatory glaucomatous, but also of simple glaucomatous eyes, may rise to a very high degree. 2. Testing the tension alone and taking increased intraocular pressure as absolute determining factor in the diagnosis of glaucoma are not admissible in some cases. For in certain stages normal tension with other symptoms, characteristic of glaucoma (changes of the disc, contraction of visual field), during intervals, or a normal tension, however not to be considered as such from the accompanying phenomena of the pupil, media, etc., may be encountered during an attack. 3. Ex-

ceptionally pupillary symptoms, characteristic of pathologically increased tension, may be combined with normal tension. Then one must assume that an attack of glaucoma shortly preceded the examination. 4. Iridectomy shows in some cases an unfavorable result in the first few days, more frequently in simple glaucoma.

5. In most cases of primary glaucoma anterior sclerotomy is not able to render the tension normal even for a short time after operation.

C. Z.

Pathogenesis of Glarcoma.—BJerrum (Wien, Med. Woch., June 1, 1912). According to the author, the symptoms of irritation in glaucoma are due to an inflammation caused by some toxin, and not to increased pressure.

The dilatation of the pupil is not produced by the increased tension alone, because injections into the vitreous by which the eye becomes as hard as stone has no effect on the pupil at all.

The healing effect of iridectomy, according to the author, is due to the fact that by the iridectomy the secretions which contain the toxines flow out with greater ease because new channels of communication are formed by the operation.

J. G.

CONTRIBUTION TO THE PATHOGENESIS OF GLAUCOMA.—FRICKER, EMIL, Rapperswil (From the eyeclinic of Prof. O. Eversbusch in the University of München. Klin. Mon. f. Aug., 50, I, June, 1912, p. 723), found in 26 out of 30 cases of primary glaucoma considerably increased arterial blood pressure, above 150 according to von Recklinghausen's scale. The frequency of arteriosclerosis, alone, or combined with affections of the heart, kidneys and lungs, was striking. With the exception of one case of tabes, other diseases were entirely lacking. The frequency of arteriosclerosis in glaucoma has been known for a long time and considered as a disturbance of circulation leading to an augmented supply of blood during systole and an insufficient efflux during diastole. Thus a permanent dilatation of the capillaries and tendency to increased transudation results, and if there is an impediment in the outflow of the ocular fluids, the intraocular tension rises. In the complicated pathogenesis of glaucoma there are, besides local predisposition, perhaps several elements which we do not know. The diseases of the cardio-vascular and renal systems, and extensive impediment of respiration as in emphysema, with increased blood pressure as accompanying symptom, undoubtedly are in a genetic connection with glaucoma and cannot be regarded as accidental findings.

Therefore in no case of glaucoma an exact general examination. with measuring the blood pressure, ought to be omitted. It should also be considered in the treatment, by venesection, elimination of factors apt to increase the blood pressure, by suitable diet and way of living. Cardiacs and vasotonics might be injurious in cases of increased blood pressure.

C. Z.

INVESTIGATIONS ON THE ASSERTED INCREASE OF ADRENALIN IN THE BLOOD IN PRIMARY GLAUCOMA.—VOGT, A., and JAFFE, B., Aarau (Klin. Mon. f. Aug., 50, II, July, 1912, p. 23), tested with different methods of reaction this assertion of T. Kleczkowski on 4 cases of glaucoma with negative results.

C. Z.

SECONDARY GLAUCOMA IN INTERSTITIAL KERATITIS, WITH RE-PORT OF A CASE.—SHUMWAY, E. A., Philadelphia (Ann. Ophthal., July, 1912). This complication is considered to be rare. The patient was a man of twenty who had been under observation for five years. He was first seen in 1907, with a well developed case of interstitial keratitis which had been going on for a year. He was given mercury by inunction and K. I. internally. Locally atropin and dionin. The attack gradually subsided, leaving vision of 6/60 and 3/30 and was not seen until February, 1909, when he had fresh injection in each eve, and increased cornial opacities. This attack was treated the same as before, and was of shorter duration. In August, the eves were again inflamed, and in December, 1911, he noticed that vision was failing and that eves were painful. This attack subsided rather quickly and in February, 1912, he was given salvarsan. A few days later his vision had failed markedly and he was complaining of pain. The right eye grounds could now be seen, and the optic nerve was found deeply cupped. Tension +1. Left eye T. +1, but could not see fundus. Atropine stopped, and eserine substituted. Lagrange's operation was performed on each eye in March of this year. The wounds healed kindly. M. B.

Acute Glaucoma in Both Eyes.—Gauthier, Brussels (*Trans. Belg. Oph. Soc.*, April 28, 1912), reported a patient having acute glaucoma in the left eye and the author performed an immediate iridectomy. The day after the operation the other eye presented symptoms of acute glaucoma; after instilling pilocarpine for four days he resorted to sclerotomy (Bettremieux's operation). Result: R. E. V.=2/3; L. E. V.=1/3; visual field normal. The tension was slightly higher in the right than in the left eye.

M. D., trans. by J. F. C.

LINEAR SCLEROTOMY FOR CHRONIC GLALGOMA.—CUSNER. Brussels (Trans. Belg. Oph. Soc., April 28, 1912), presented three patients who were attacked with glaucoma and who had submitted to the operation of simple linear sclerotomy. The conjunctiva was incised 1½ mm. from the limbus and the sclerotic was excised for a length of 1, 2 or 3 centimeters, but leaving an extremely delicate stratum, allowing the uvea to be seen.

M. D., trans. by J. F. C.

A New Method of Treatment of Glaucoma by Pilocarpin and Dimensional Value of Relation of Works of Treatment of Glaucoma by Pilocarpin and Dimensional Value of Aug., No. 2 of 21st of February, 1912, Trans. from Abstract in La Clin. Ophthal., June 10, 1912).

Doctor von Arlt treats glaucoma in the following manner: Two (2) milligrammes of powdered chlorhydrate of pilocarpin are first of all introduced into the eye by means of a small spoon of a size to contain that quantity. Eight minutes afterwards, by means of a second spoon five (5) milligrammes of dionin are introduced. This practice is repeated at the end of 3 or 4 days. Concurrently pilocarpin from 2 to 3% is instillated every 3 hours. After the eighth day and until the close of the month the pilocarpin is of 1% strength, applied twice daily. The characteristic point of this method to which the author draws special attention is the employment at the outset of massive doses of the alkaloids, pursuing the plan of allowing an interval of 8 minutes between the applications. The author relates four cases treated with success by this method.

In the historical part of his work he renders homage to Darier's important contributions to the study of this medicament. He recalls how dionin, associated with atropin, is efficacious in the treatment of affections of the uveal tract. It might seem that the author had made an exaggearted panegyric of dionin, but it appears very natural when we are told that to this agent he, in his own person, owes the cure of a chorio-retinitis in the macular region of a myopic eye from which he had suffered for two years.

The application of 5 milligrammes of dionin in powder (one application every 6 days) effected a complete cure.

Arlt is convinced that dionin thus applied in massive doses, exercises its action not only upon the anterior segment of the eye, but effectually in the deeper parts, even in the chorioid and retina, and perhaps also in the vitreous body.

L. W. F.

INJURIES.

Argyrosis.—Ewing. A. E., St. Louis (Amer. Journ. Oph., April, 1912). The writer explains that staining of the conjunctiva from silver is less common now than 25 years ago when strong solutions of silver nitrate were employed more extensively than is the custom at present. He calls attention to the fact that there are now many instances on record that the so-called organic silver salts, argyrol and protargol, possess similar staining properties; he has personally observed two cases where there was marked discoloration of the upper and lower lids about the inner canthus due to argyrol which had been used to disinfect the lacrimal sac, in which the solution had invaded the tissues in consequence of a rupture in the wall of the sac. Other instances of staining from argyrol are on record.

The writer reports two cases in which the cornea suffered in like manner; in these there was marked argyrosis in the border of a scar resulting from corneal ulceration.

"Although the argyrosis which ordinarily comes to the notice of the oculist is local, and has been caused by application of silver in some form to the conjunctiva, the conjunctival argyrosis may also be a part of general systemic argyria, as was not infrequently observed formerly when silver nitrate was employed as a remedy for epilepsy and for locomotor ataxia. Long continued local application to the throat has caused argyrosis of the face, neck and conjunctiva, and the conjunctival discoloration has been observed when the nitrate had been employed for twenty-five or thirty years on the scalp to color the hair. It occurs among the makers of glass pearls where silver is used as a coloring agent, and among those who are employed in the manufacture of dry plates for photographic purposes.

"The writer had the opportunity of examining microscopically specimens presenting argyrosis and found the following: "The epithelium proper was lacking in the pigment, but the vessels and lymph spaces of the papillae were richly loaded with it. The blood vessels entering the papillae in some places were wholly blackened, and numerous irregular deposits were located in the vascular channels surrounding the bases of the papillae. Brownish or black granules discrete or in irregular masses of various sizes were distributed throughout the adenoid layer mingled with brown or blackened elastic fibers. Here and there in the Meibomian glands and in the muscles and fat of the lower lid the pigment was evident,

less so in the upper lid, an indication that gravity had played a role in its distribution. In the blood stream of many of the vessels there were round black bodies resembling white blood cells loaded with the pigment, and as this pigment blanched when the sections were treated with tineture of iodin and potassium iodide the silver carrying property of these cells seemed to be established; but with the further test of potassium permanganate and oxalic acid the cells became clear, while the silver deposit in the papillae and in the basal membrane remained unchanged, demonstrating that the cells were probably colored with an organic pigment."

C. H. M.

IGERSHEIMER, J. (From the eye clinic of Prof. E. von Hippel in the University of Halle. Klin. Monatsbl. f. Aug., 50, I, May 1912, p. 518), reports the clinical histories of 11 cases, which, after using chrysarobin ointment on the skin, showed the same affection of the eyes: Conjunctivitis without secretion and superficial punctuated keratitis, consisting in fine greyish opacities of the cornea. The chrysarobin keratitis disappeared after a few days in some cases, in others it persisted for weeks; the iris was not involved. In some patients an ectogeneous origin by the introduction of particles of chrysarobin could be observed, but not in the majority. In some the chemical agent may have reached the lids intracutaneously and from there the conjunctival sac. In some, although rare cases, an absorption of larger quantities was surmised.

In experiments on rabbits J. could not produce an inflammation of the eyes, if the salve was brought on the surroundings of the eyes, but, if introduced directly into the conjunctival sac, a conjunctivitis with secretion and participation of the cornea resulted, similar to that in the patients. The anatomical examination of several globes of the rabbits, however, showed no distinct changes of the cornea. The characteristic intense photophobia in these cases is undoubtedly due chiefly to the corneal process. As the affection consists in a disease of the epithelium of the cornea, cocain is contraindicated, and, the iris not being involved, also atropin, which is apt to aggravate the photophobia. Besides discontinuing chrysarobin, a mild eye salve, e. g. of sublimate, and dark glasses will be most suitable.

C. Z.

GLARING BY THE SUN.—CORDS, RICHARD (From the eyeclinic of Prof. H. Kuhnt in the University of Bonn. Zeit. f. Aug., 27, June 1912, p. 511), reports the clinical histories of 11 out of 32

cases of ocular affections from observing the eclipse of the sun, on April 17th, 1912, between 12 to 2 P. M., with a complete review of literature from 1875 to 1911. According to the subjective symptoms C. distinguishes 3 groups: 1. Secondary images, which disappeared at the latest the next morning. 2. Typical visual disturbances (positive central scotomas); (a) without changes at the macula, (b) with changes at the macula. 3. Atypical cases.

Many of the patients saw yellow or, in the dark, blue spots in the afternoon. Without exception these disappeared the next morning. In 4 more severe cases a distinct light focus, an optogram in the sense of Dufour, was present. In one case e. g. it was round, whitish, of 1/4 disc diameter, light pink in the center, surrounded by a red area, darker than the normal fovea.

In all 14 cases that came later, there was either no anomaly of the fundus, or the region of the macula was strikingly dark brownish red, perhaps preceded by optograms. The most characteristic symptom in these cases was a central, seldom paracentral, positive scotoma, which as a round, rarely crescentic, more or less dark grey, shadow lay over objects and appeared directly after the eclipse or the next morning. It had a diameter of from 1/2 to 1°, corresponding to an area of the retina of 0.1-0.3 mm. As faces 20 m. distant entirely fall into the area of the scotoma, the characteristic complaint was, that faces could not be recognized. Especially distressing was a peculiar oscillating or rotating motion in the scotoma. A ring scotoma, described by Jess, could not be observed in any of the cases.

Vision was generally not very much impaired, as the patients read with the relatively good seeing paracentral portion of the retina. V. fluctuated between 1 and 1/6. Nearby Jaeger I could mostly be read, but it was laborious, because the fixated letter disappears or becomes indistinct.

The prognosis must be guarded. Only those cases are favorable in which ophthalmoscopic changes are absent in the first few days. In others the course greatly varies. While in some the positive scotoma subsides without restoration of the acuity of sight, others are molested by scintillating or the dark spot. Whether therapeutic measures (dark room, iodin, dry cupping, salve on forehead, dionin, strychnin) have any influence on the process could not be determined. Individual differences could not be explained. The glaring pain varied. It decreased after repeatedly fixating intense lights. The color of hair, iris and fundus played no part.

For obtaining a survey over the number of injuries, C. sent

letters of inquiry to 131 oculists of the Rhenish province. One hundred and seven answers reported 387 cases of glaring by the sun. One hundred and sixty-six of these were severe, i. e. showed macular changes, 184 slight, the others uncertain. In 2 the optic disc was pale. Wirtz reported a case of hemorrhage at the macula and severe neuritis. The number of cases out of a population of 7.5 millions was very high and C. says that in future cases of unexplained amblyopia one has to think of a preceding glaring by the sun. Six colored plates illustrate the different affections of the fundus.

C. Z.

ON A CASE OF EXPULSIVE HEMORRHAGE AFTER CATARACT OPERATION AND FORMATION OF CAVERNAE IN THE OPTIC NERVE. -KAMBE. Toshiro. Nagoya, Japan (From the eyeclinic of Prof. W. Stock in the University of Jena. Klin. Mon. f. Aug., 50, I, May 1912. p. 543), reports a case which occurred in a man aged 81. After a flap section and iridectomy the tense capsule of the lens was opened with the capsule forceps. At the attempt of extraction very liquefied vitreous rushed out before the lens, which, however, was easily extracted without loop. A violent bleeding from the eye occurred immediately after the eye was bandaged, and relapsed on the 7th day. As the eyeball commenced to shrink, the enucleation was performed in local anesthesia 3 weeks later.

The clinical history and microscopic examination of the eyeball, which are given in detail, showed hyaline degeneration of the pupillary margin, the vascular walls of the uvea partly thickened, vitreous liquefied, and the retinal vessels very narrow. If such changes are present in an eye and a cataract operation is performed, it is possible that the liquefied vitreous gushes out before the lens, as then the intraocular tension is very much reduced so that a filled intraocular artery with altered walls may burst. The source of the hemorrhage was most likely in the chorioid.

K. gives a review from literature which contains about 150 cases. According to Sattler, these hemorrhages have been observed much more frequently after the introduction of cocain. He thinks that an intense dilatation of the vessels follows after the effect of cocain has ceased, which in predisposed eyes may lead to rupture. From a case of Becker we learn that in expulsive hemorhage exenteration ought not to be performed, because the torn retinal vessels close less readily than if they are crushed with the seissors in enucleation.

A CASE OF EVULSION OF THE OPTIC NERVE.—NATANSON, A., Moskau. (Klin. Mon. f. Aug., 50, II, August 1912, p. 220). A man, aged 18, in falling, thrust the point of his cane into his left eye. The pain was so severe that he could not recover for quite a while. The lids were very much swollen. After a few days he noticed that he could not see on that eve. He came to N. 2 weeks later, who found subcutaneous and subconjunctival ecchymoses, a recent scar at the inferior medial angle of the ocular conjunctiva, pupil maximally dilated and immovable, refracting media clear, skiascopically myopic astigmatism, normal motility, no exophthalmus nor enophthalmus. At the place of the optic disc was a hole. This was recognized by the difference of refraction of 9 D.= a depth of 3 mm. The bottom of the hole, in which the vessels were lacking, was partly black, partly greyish red, showing no details, its margin, apparently the scleral ring, was white, forming a characteristic myopic conus on the temporal side. It occasionally threw a shadow upon the bottom of the hole which varied in width with the inclination of the rays. Next to the hole bordered an oval yellowish white area, without retinal vessels which stopped at its margin, and most likely devoid of retina. Its periphery was covered by hemorrhages. The center of the fundus was milky opaque. All these symptoms indicated a separation of the optic nerve at the lamina cribrosa. N. thinks that, analogously to most cases, the point of the cane penetrated into the orbit, and, by stretching the optic nerve backwards and pushing the globe forward, tore the optic nerve out of the scleral hole. C. Z.

ANOTHER AUTOPSY OF A CASE OF TRAUMATIC ENOPHTHALMUS.— PICHLER, ALEXIUS, Klagenfurt. (Zeit. f. Aug., 27, June 1912, p. 520). The autopsy revealed laceration of the fasciae, extensive destruction of the lateral orbital wall (absolute enlargement of the orbit) and shrinking of the fat tissue (relative enlargement of the orbit). As in the region of the zygomatico-frontal suture, which was entirely lacking, the fascial ends of the levator and the upper and lateral recti are inserted, they must have been torn off by the injury, which P. considered clinically as an important factor in the etiology of enophthalmus. Hence also the downward position of the eyeball and the lateral half of the palpebral fissure. The enlargement of the orbit, which P. had surmised from the hollow eyed appearance, was confirmed by the autopsy, imparting to this symptom importance for the pathogenesis. The relaxation of the fasciae and the absolute enlargement of the orbit were found also in a former autopsy as the cause of enophthalmus. C. Z.

EXTRACTION OF A PIECE OF COPPER FROM THE VITREOUS.— HAASE, GUSTAV, Harburg. (Klin. Mon. f. Aug., 50, II, September 1912, p. 347). Sachs' transilluminator and Roentgen rays showed a foreign body of metallic lustre behind the lens, imbedded in exudate, and there was a perforating injury of the lower temporal quadrant of the cornea with hyphema. After forming a conjunctival flap and fixating the eyeball by 2 conjunctival sutures, H. entered with an anatomical forceps through a meridional section in the upper temporal quadrant of sclera, in vain. Then the section was enlarged with seissors and the very small foreign body extracted with forceps. This was greatly facilitated by illumination by H.'s head lamp. The eye recovered with V=5/7.

ON EXTRACTION OF PIECES OF COPPER FROM THE VITREOUS.—VON HIPPEL, EUGEN, Halle (Klin. Mon. f. Aug., 50, II, July 1912, p. 52), gives a brief review of the cases, so far published, arranged in tabular form, with 45 successes out of 60 operations. In 1894, Leber reported on 40 cases, out of which 25 were operated upon. Of these the extraction succeeded in 18 cases. Two of these were enucleated later. In 7 the form of the eye was preserved, in 8 with a certain amount of vision (from counting fingers at 1 m. to V=1/6).

Von H. reports on 15 cases of injuries by copper or brass with remaining pieces in vitreous. In a child, who was injured by a gun cap, the small shining piece of copper was seen at about the center of the vitreous. The lens was slightly opaque. After performing a small iridectomy v. H. penetrated the lens with a fine pair of anatomical forceps and at once removed the foreign body. The cataract was extracted later and V. was 5/7 with glasses.

Three eyes were enucleated on account of infection. In the remaining 9 the operation was done with meridional section and large conjunctival flap. Concentrated illumination of the field of operation with electric light is of the greatest importance.

The clinical histories of some cases are given in detail. Eight out of 10 extractions were successful, in 7 the eyeball was preserved, 5 had V. 5/35, 1/25, 5/15, 5/20, 5/7, in 2 perception of light and projection were good and an improvement was expected. All eyes had normal tension and were absolutely without irritation.

The operation can be performed successfully, if the seat of the foreign body can be approximately determined. The exudates, formed around it, serve as a guide for the operator. Generally the pieces are aseptic, so that the inflammation rapidly subsides after

extraction. If the site of the foreign body cannot be ascertained and the eye is without irritation, v. H. advises to wait, as his experience showed that a localization became possible in the further course. All optical obstacles must be speedily removed, e. g. cataract by discission and extraction. Since the eye most likely will be lost if the foreign body is not extracted, a certain boldness in these operations is justified. V. H. would refrain from an operation if the patient has only one eye left which has tolerated the foreign body for a longer time with preservation of sight. C. Z.

AN UNUSUAL CASE OF STEEL INJURY.—ALLPORT, FRANK, Chicago. (Ophth. Review, February, 1912). Giant magnet gave no response, but Roentgen Ray picture revealed the steel almost exactly in the center of the field and about 25 mm. from the surface of the cornea. Enucleation performed. The piece of steel had passed completely through the eyeball and was found in a small mass of exudate which was attached to the eyeball. The eyeball was opened and a beginning purulent ophthalmitis was found at the ciliary region. A red exudate mass was found at about the macula, where the steel had perforated the posterior portion of the eyeball.

G. I. H.

REPORT OF TWO CASES OF INJURY TO THE EYE BY PIECES OF STEEL, ONE A DOUBLE PERFORATION.—STUART, CHARLES C., Cleveland. (Cleveland Medical Journal, April 1912). The first patient, a young man of 19, had a small perforating wound of the cornea just below the pupillary area. There was present a vertical tear of the anterior capsule of the lens just back of the corneal wound and the lens was becoming cataractous. A radiograph showed a foreign body in the eve twenty millimeters behind the cornea, nine millimeters below the antero-posterior line and almost in the vertical plane. Under general anesthesia the conjunctiva was dissected down and out, the sclera was opened and at the second application of the magnet the foreign body was removed. There was no escape of vitreous and three sutures were placed in the conjunctiva. Healing took place kindly and the patient soon left the hospital. As the lens became completely cataractous a needling operation was done upon the lens; later, one upon the capsule. By adding +10 s = +1.50 cX 180, V.=3/XL. Visual results of cases of which W. M. Sweet made radiographs, are stated also conclusions by the same author. The second case was that of a double perforation of right eye. A radiograph showed a foreign body lying behind the eyeball, one by

one by one millimeter in size. Two magnet extractions were attempted without success. About twenty months later V.=6/V in right eye. Sweet's results in double perforation are mentioned. The writer concludes that a study of each case makes it evident that a good outcome is only to be expected when the foreign body is very small, as was the case which reported.

M. D. S.

THE REMOVAL OF FOREIGN BODIES FROM THE CORNEA AND CONJUNCTIVA.—MAY, CHARLES H., New York (American Journal of
Surgery, June 1912). The writer gives careful instructions, using
several illustrations, bearing in mind that the removal of cinders and
other foreign bodies from the eye is in most cases the task of the
general practitioner rather than that of the specialist. He says:
"The local anesthetics which are best employed for this purpose are
substitutes for cocaine—either holocain muriate in 1 per cent. solution, alypin in 3 per cent. solution, or novocaine in 3 per cent. solution may be used; of these three the writer prefers holocain, because
the anesthesia is more profound, but alypin and novocaine are also
satisfactory." He states objections to the use of cocaine as a local
anesthetic in the eye.

M. D. S.

THE TREATMENT OF EYES INJURED BY FOREIGN BODIES.—WHEELER, JOHN M., New York City (American Journal of Surgery, October 1912). The author describes method of removal of foreign bodies from the cornea, as to light, local anesthesia, position of patient and surgeon, etc. He illustrates and describes a corneal curette, which he considers effective and safe in the hands of a surgeon not especially trained in eye surgery. He believes it a wise precaution to prescribe argyrol 25 per cent. or some other mild antiseptic to be used by the patient three or four times a day for a period of a few days after removal of foreign bodies. He describes briefly the removal of foreign bodies from the interior of the eyeball.

M. D. S.

TRAUMATIC CATARACT OF UNUSUAL ORIGIN.—TRIPP, IRA, Cleveland (Cleveland Medical Journal, July, 1912), describes an injury of the eye of an engineer from the bursting of a water gauge. When first seen seventeen hours after the injury, the vision was 20/xl. Two slight scratches were visible on the cornea, but no sign of a foreign body was present, the X-ray showed nothing. No change occurred until the tenth day, when the anterior chamber was found shallow, the tension minus, vision, fingers at five feet, the pain

severe. The eye then improved, the anterior chamber reformed, tension became almost normal. A cataractous lens was found. Vision gradually grew dimmer, with great pain of a lancinating character. Fifteen days from the first injury an enucleation had to be done on account of the agony and fear of panophthalmitis, an hypopyon having formed.

M. D. S.

FRACTURE OF THE NOSE WITH OCULAR AND AURAL INVOLVE-MENT.—DEWATRIPONT (Bull. de l'Assoc. Med. Belge d Accidents du Travail, Jan. 15, 1912), related the case of a worker who fell on his nose, landing between a block of stone and a piece of wood, producing a fracture of the bony walls of the nose and their impaction into the frontal sinus. The anterior portion of the ethmoid plate was also fractured. After union of the fractures there developed a paralysis of the inferior oblique and chronic dacryocystitis.

M. D., trans. by J. F. C.

RUPTURE OF THE DEEP MEMBRANES OF THE GLOBE FOLLOWING A VIOLENT ELBOW THRUST.—RUTTEN, Liege (Soc. Belge d'Oph., April 1912). After a sudden elbow thrust into the eyeball, there was produced mydriasis; the eye resembled that of an amaurotic cat's eye; pericorneal injection; intraocular tension increased and exudates due to uveitis and hyalitis.

It is probable, he states, that the contusion produced a shattering of the posterior walls of the globe.

M. D., trans. by J. F. C.

Perforation of the Orbital Vault.—Gallemaerts (Belgian Royal Academy of Medicine, Feb. 24, 1912), related the subsequent history of a case he had presented at the last meeting of the Academy (reported in the April number of Ophthalmology), that of a child whose orbital vault had been pierced by a slate pencil and was apparently cured, was attacked thirteen months after the accident with grave cerebral symptoms; there was choked disc and paralysis of the external rectus. Sudden death followed. At the autopsy an abscess was found which had destroyed the white substance of the frontal lobe in advance of the lenticular body and extending up to the region of the third ventricle. The walls of the pocket were smooth and contained about 20 c. c. of creamy greenish pus, containing streptococci.

The author believes that in cases of trauma to the cranium, the patients should be frequently examined ophthalmoscopically; the

appearance of choked discs might be an indication that intervention, if practiced early enough, might increase the chances of cure.

M. D., trans. by J. F. C.

INJURY TO THE EYE BROUGHT ON DURING AN OBSERVATION OF THE SUN'S ECLIPSE.—HIRSCH. C., Prag. (Wien, Klin, Randschan, July 21, 1912). In snow blindness and electric ophthalmia, the outer anterior parts of the eye become affected, whereas during observations of the sun's eclipse the lesion is located in the macula lutea. The chief symptom in this affection, therefore, is a "scotoma helieclipticum." The scotoma, as a rule, is a positive one. The power of vision is usually diminished, but the field of vision and the sense of color are normal. Ophthalmoscopic examination often shows a normal condition in spite of the presence of a functional disorder.

In the majority of cases, where there is a positive but no absolute scotoma, the prognosis is good. Absolute negative scotoma is very rare.

The treatment consists in the application of hygienic measures only.

J. G.

INSTRUMENTS AND METHODS OF EXAMINATION.

A New Knife.—Brawley, Frank, Chicago, Ill. (Ophth. Record, March 1912). The blade is the same size as Zeigler's knife, but the point is more strongly curved and is very sharp so that it may easily be stabbed through the iris and lens capsule. The remainder of the blade edge is sinuous, the better to hold the iris fibers while the incision is being made with a sawing motion. The knife should be introduced somewhat as though it were a sharp hook, as the curved point makes direct introduction impossible. G. I. H.

A New Bottle With Eye Pipette, Which Can Be Sterilized.—Goerlitz, Martin, Hamburg. (Klin. Mon. f. Aug., 50, II, July 1912, p. 80). The pipette has two projections which fit into corresponding notches at the mouth of the bottle if this is closed. By lifting and giving the pipette a turn of 90° it rests with the projections on the margin of the bottle and can remain there during sterilization. It may be obtained from R. Wurach, Berlin. C. Z.

A NEW APPARATUS FOR ILLUMINATING THE FIELD OF OPERATION.—STOCK, W., Jena. (Klin. Mon. f. Aug., 50, II, July 1912.

p. 81), devised an apparatus (built by Zeiss at Jena), which illuminates the field of operation from three sides. The advantages are that, if one source of light is cut off, sufficient illumination from the two others remains, its great intensity of light, no disagreeable heat.

C. Z.

STILET NEEDLE FOR THE REMOVAL OF FOREIGN BODIES FROM THE CORNEA AND SIMILAR MANIPULATIONS.—HAASE, W., Homburg v. d. H. (Klin. Mon. f. Aug., 50, I, May 1912, p. 569), constructed a needle, built like the cystotome of von Graefe. It easily enters by its three-edged point, on the principle of the inclined plane, between corneal tissue and foreign body and lifts this out. The instrument and its manner of action are illustrated. It is manufactured by R. Wurach, Berlin, and costs \$0.75.

A NEW INSTRUMENT FOR MEASURING THE PUPILLARY DISTANCE. —OPPENHEIMER, E. H., Berlin (Kin. Mon. f. Aug., 50, I, May 1912, p. 570), describes and illustrates his new instrument, constructed on the optical principle, that the eyes of the patient, corrected for distance, are directed straight forward if he sees, through the convex lens of the instrument, covering both eyes, the cross in the eye piece of the observer single, as this lies in the focus of the convex lens.

C. Z.

A CONVENIENT ATTACHMENT FOR THE DE-ZENG ELECTRIC HEAD-LIGHT—NEWCOMB, J. R., Indianapolis, Ind. (Ophth. Record, March 1912). A three and one-half volt pocket battery is attached to the headband with a single metal strip one inch in width, with one rivet passing through its center, the strap being soldered to the case.

G. I. H.

A Modern Photometric Equipment. The Measurement of Luminosity in the Technical Laboratory.—(Scientific American Supplement, No. 1904, June 29, 1912). In developing scientific illuminating appliances a most complete commercial photometric laboratory has been equipped at a works of one of our large manufacturing firms in Newark, Ohio. A number of accompanying illustrations shows the modern instruments in this laboratory, including a special switchboard and rectifier with apparatus for maintaining a constant current, also a device for measuring the coefficient of reflection at different angles. Four methods for lamp and reflector testing where the lamp is in a pendent position are mentioned. The Dibdin radial photometer with method of use is described.

ON BJERRUM'S METHOD OF EXAMINATING THE VISUAL FIELD IN GLAUCOMA.—FLEISCHER, BRUNO. (From the eveclinic of Pref. eyeclinic of Prof. G. von Schleich in the University of Tübingen. Klin. Mon. f. Aug., 50, II, July, 1912, p. 62). The method of Bjerrum consists in perimetry with small test objects on a dark plane at larger distances. F. used a blackboard of 2 mm. square, on which circles were drawn 5 cm. apart and radii 15° apart, at a distance of from 3/4 to 1.5 mm., and test objects of 5 mm. sidelength. From his experience of several years F. entirely confirms the results of Bjerrum. The method gives a much more exact delineation of the glaucomatous visual field and allows of early and differential diagnosis, which otherwise is not possible. According to these tests the scotoma in glaucoma is in connection with the blind spot. Bjerrum attributes the reason for the peculiar field of vision in glaucoma to an elective disease of the optic fibers. C. Z.

THE NECESSITY FOR THE USE OF COLOR NAMES IN A TEST FOR COLOR BLINDNESS.—EDRIDGE-GREEN, F. W., England. (The Brit. Med. Journ., July 6, 1912). Nothing, in the writer's opinion, has retarded the knowledge of the subject of color blindness more than the statement (attributed to Holmgren) that in any test for color blindness names were not to be used. He has never come across a man who was a candidate for an employment in which he had to distinguish between red and green light, and who on examination called green. "red" and red "green" through color ignorance, and who was really able to distinguish between these colors and had a normal color sense. All the tests for color blindness which have been proposed during the last few years have been naming tests, and those who are best qualified to judge have recognized that the use of names is a necessity. There are, however, many who still adhere to the old statement that names should not be used, and the writer therefore analyzes the difference between matching and naming colors to show that the use of color names is a necessity and that no test for color blindness can be efficient which ignores them.

The writer has been lately ascertaining the percentages of color blindness in men, and finds that about 6 per cent. are definitely color blind, whilst 25 per cent. have a diminished color perception compared with the other 75 per cent. The 6 per cent. when examined with his lantern made mistakes between the red, green and white lights, when they were clearly distinguished as different by the other 94 per cent., and any onlooker would say that they were rightly re-

jected, and it would not be safe for them to be in command of a ship in which it was necessary for them to distinguish between these three lights.

Many color-blind men, the writer asserts, will pick out the wools to match all five test colors as accurately and easily as a normal sighted person, so that, after a long, tedious examination he would not have suspected they were color blind; but upon examination with his lantern, lasting less than half a minute, red has been called green, nothing or white; white has been called red or green, and green has been called red or white.

C. H. M.

THE DETECTION OF ALLEGED VISUAL DEFECTS.—ANDREWS, AL-BERT H., Chicago, Ill. (Jour. of Opth. and Oto-Laryn., February 1912). (1) If the pupil does respond to light it is a positive indication that the retina is sensitive and that the eye is capable of seeing. If light is directed into the blind eye it affects neither that pupil nor the opposite normal eye. (2) Have the patient read with a pencil held about two-thirds of the distance from his eye to the printed page. If but one eye is being used the words lying directly beyond the pencil from the eye will be obscured, while if both eyes are being used the patient will read directly across as though no pencil were between his eye and the page. (3) Carry a lighted candle across the field of vision from the sound eye toward the alleged blind side. Instruct the patient to indicate when the light has disappeared. If he claims that the light has disappeared before the shadow of the bridge of the nose falls on the pupil of the healthy eye, he is malingering, or if he continues to see the light after the shadow falls on the pupil of the sound eve he is malingering. (4) Have the patient look with the alleged blind eye at something he holds in his hand. No matter if he is totally blind in that eye or has been for a long time, he will automatically fix his blind eye on the object held in his hand. As a rule those who are pretending to be blind will refuse to fix the eye on the hand, thus proving that they are attempting to deceive. The tests requiring special apparatus are: (1) A convex glass of 6 D is placed before the sound eye. In this way the eve is made artificially myopic, so that its far point lies at a point of about 17 cm. If it is possible in this way to withdraw the book considerably farther than 17 cm. without the patient's ceasing to read, it proves that he has been reading with the eye alleged to be bad. (2) Hold before the sound eye a prism in such a way that the refracting edge is horizontal and extends transversely across the middle of the pupil. In this case two images of every external object

will be thrown upon the retina, one transmitted through the free half of the pupil, and the other through the half covered by the prism, and the eye sees double the object upon which it has been fixed. If we use the reading test for this examination and compel the person under examination to read sometimes the upper, sometimes the lower of the two double images, we can determine directly the visual acuity of each eye separately without the patient being aware of it. (3) Place the cobalt glass in the trial frame before the sound eye and direct the individual to look at an incandescent globe. If he is malingering he will probably attempt to close the alleged blind eye or he will insist that he sees nothing, while if he is not malingering he will say that the filament will appear white with a line of bright red on either side of it. The simulation of visual impairment is much more difficult to detect. This type of malingerer is best detected by increasing the impairment by the use of glasses.

G. I. H.

IRIS

To the Question of Peristaltic Contractions of the Sphincter Pupillae.—Sattler, C. H., Giessen (Klin. Mon. f. Aug., 50, II, September 1912, p. 349), examined numerous eyes of healthy and sick people, with Zeiss' corneal microscope, at a more or less intense oblique illumination, in regard to this phenomenon, and gives the description of 11 cases. The contractions ceased after m-stillations of atropin and pilocarpin, but were not influenced by cocain. The cases in which the contractions could be distinctly observed almost always were patients with sluggish or immovable pupils. In promptly reacting pupils slight peristalitic movements can be noticed only under the most favorable conditions of observation (auto-pupilloscopy). S. saw it only in 1/4 of the cases of tabes. The author does not venture an explanation of the nature of the irritation, which elicits the peristaltic movements. C. Z.

LACRIMAL APPARATUS.

Polypoidal Formation in the Lacrimal Sac.—Tooke Fred. Montreal (Arch. Ophthal., September, 1912, XLI, 446), has examined, microscopically, fifty excised lacrimal sacs and has found polypoidal structures present in two cases. He reports the two cases and concludes that polyps of the tear sac, as in the nose and accessory nasal cavities, are evidences of hyperplastic growth or actual tumor formation, which may possibly be due to a pre-existing inflammation, and adds that this inflammation is not necessarily of an

infective or suppurative type. He calls attention to the fact that the passage of probes would not have been effective in these cases and that the primary etiological factor was not trauma, but rather a possible indefinite or chronic thickening of the nasal muccosa.

The article is illustrated.

W. R. M.

('ONGENITAL ABSENCE OF BOTH LOWER PUNCTA. LIFELONG (DOUBLE DACRYOCYSTITIS. APPARENT CURE FROM DACRYOCYSTORHINOSTOMY.—LUEDDE, W. H., St. Louis, Mo. (Ann. Ophthal., July 1912). Only three cases of congenital absence of the puncta where other conditions were normal are to be found in the literature.

A man aged 23 called upon the author in October, 1910, on account of an injury to his left eye. The cornea was cut, iris prolapsed with pus in ant. chamber. Copious mucopurulent discharge was present at all times on pressure over the lachrymal sac of both sides. No evidence of a punctum was present on either lower lid. The dacryocystitis had existed as long as the patient could remember. The left eye was enucleated because of beginning ophthalmitis.

Probing and syringing through puncta of upper lids was instituted without results. A prolonged attempt was made to maintain an artificial passage from the inner angle of the right lower lid to the lachrymal sac, but it failed. There was no evidence of a caniliculus present.

Dr. Bryan was now asked to perform the nasal operation of dacryocystorhinostomy, which the author considers superior to extirpation of the lachrynial sac. Dr. Bryan's report of the operation follows:

SUBMUCOUS DACRYOCYSTORHINOSTOMY FOR PERSISTENT DACRYOCYSTITIS.—BRYAN, W. M. C., St. Louis. (Ann. Ophthal., July
1912). This operation was performed upon Luedde's case of Gongenital Absence of the Puncta, and is described by the author as
follows:

Operation—Owing to a prominence of the lateral nasal wall just anterior to the nasal side of the median wall of the saccus lacrimalis, which prominence is frequently present, a clear view of the exact site of the operation was not immediately possible, and to overcome that difficulty a submucous operation was devised. A vertical incision was made through the mucous membrane just anterior to the prominence mentioned, and the mucous membrane was elevated from the underlying bone to a line just behind the region of the fossa sacci lacrimalis, or just in front of the anterior end of the attachment of

Lens. 251

the middle turbinate and extending up to the height corresponding to the level of the lacrimal sac determined externally. The mucous membrane thus elevated was cut free above and posteriorly and turned down out of the way over the inferior turbinate. The bony wall was freely exposed to view, and under the guidance of the eye the median wall of the fossa sacci lacrimalis was removed by sharp curettes and punch forceps. On breaking through the bony wall, the sound, which had been passed previously, moved and gave the assurance that the fossa had been entered. After the removal of the bone, the membranous wall was cut away and several drops of pus were evacuated. The upper posterior angle of the mucous flap was removed to correspond to the opening made and the rest replaced and packed into position. Healing was prompt, with almost immediate freedom from the suppuration which had lasted so long.

M. B.

LENS.

Coloboma Lentis.—Van der Hoeve, J., Utrecht (Arch. f. Aug., 72, p. 145), examined the eyes of a man, aged 19, for military service. V, 2/60, was poor since infancy. One-fifth of the right lens at the nasal side was lacking. The lens border was not convex as in dislocation, but showed a saddle-shaped indentation. The corresponding pupillary area was jet black, while the remaining portion of the lens gave a bluish grey reflex. With a strong convex glass behind the mirror the fibers of the zonula Zinnii could be seen in the upper and lower portions of the coloboma, but were missing in the middle portion. The optic disc showed a conus downwards and inwards. The inverted image appeared larger through the aphakic, smaller through the lenticular, part of the pupil. The accommodation of the right eye was diminished.

The majority of colobomas of the lens occur in the lower portion, and such a large atypical coloboma as in this case was scarcely ever observed. With regard to the etiology the experiments of Wessely strongly support the theory of Becker, who attributes the cause of coloboma of the lens to local insufficiency of the zonula. Not all authors ascribe the deformation of the lens to the lacking traction by the zonula, since it has not been decided, whether the condition consists in a change of form or a defect. Therefore the author compared the weight of the two lenses of rabbits, on one of whose eyes iridectomy had been performed according to Wessely. The result was that the weight of the colobomatous lenses was less than that of the other lenses. H. assumes in this case a poor primary development of the lens or the zonula as etiological element. C. Z.

MATERIA MEDICA AND THERAPEUTICS.

Benzosalin in Sympathetic Ophthalmia.—Stock. (Wien. Med. Woch., March 30, 1912). Large doses of salicylate of soda have of late been employed in cases of sympathetic ophthalmia up to 13 gms. daily. Inasmuch as such large doses can not be taken by a patient for any length of time without producing toxic symptoms, the author employs daily 20 gr. of benzosalin with good results.

J. G.

Lecithin in Tobacco Amblyopia.—Dewaele (Belg. Royal Acad. of Med., April 27, 1912), described five cases treated with lecithin and concluded that the treatment quickly brought to the normal those cases recently affected and that chronic cases are rapidly improved, but that progress is arrested at a certain point probably to the point where the definite lesions will not permit of further improvement.

M. D., trans. by J. F. C.

ON THE INFLUENCE OF DIONIN ON THE PUPIL AND TENSION OF NORMAL EYES.—TOCZYSKI, FRANZ (From the eyeclinic of Prof. E. Machek in the University of Lemberg. Zeit. f. Aug., 28, July 1912, p. 32), reports in detail on his experiments on 12 eyes with normal tension, tested with Schioetz's tonometer before and after the application of dionin, from which he reached the following conclusions: 1. Dionin causes miosis of longer or shorter duration, which in the majority of cases passes into mydriasis. 2. The miosis fluctuates between rather great extremes with the degree of chemosis, while the mydriasis is very limited. 3. The duration of mydriasis is in no intimate connection with that of miosis. 4. The intraocular tension rises after the application of dionin and, after reaching a certain maximum, declines to, or below, the normal state. 5. The fluctuations of tension have only this relation to the changes of the width of the pupil, that the tension is augmented during miosis. During mydriasis it is either still increased, normal or diminished. C. Z.

APPLICATIONS OF BICHLORIDE OF MERCERY AND DIONIN IN PLACE OF OPERATIONS ON THE EYE.—Katz, R., St. Petersburg. (Wien. Klin. Rundschau, Aug. 25, 1912). Bichloride of mercury acts as an antiseptic and resorbent. Eyes injured by traumatic perforation and threatened with panophthalmitis may sometimes be saved from enucleation by an application of bichloride of mercury.

Dionin by its anaesthetic and resorbent powers may sometimes save a degenerated glaucomatous eye, with its excruciating pain, from operation.

J. G.

Uses of the Disinfecting Properties of Iodine in Ophthal-Mology.—Dewaele, Liege (*Trans. Belg. Oph. Soc.*, April 28, 1912), for the past three years has used iodine in the form of an ointment, with an anaesthetic, as a disinfectant of the cornea, notably after the exaction of foreign bodies. The formula follows:

Stovaine, 15 centigrams, finely pulverized and dissolved in five drops of official oil.

Add, after mixing, preferably on a water bath:

Lanoline, 5 grams.

Vaseline, 10 grams.

Add gradually the following solution:

Iodine, 15 centigrams.

Iodide of sodium, 30 centigrams.

Aqua, 14 grams.

M. D., trans. by J. F. C.

PRE-OPERATIVE TREATMENT OF TUBERCULAR DACRYOCYSTITIS WITH BISMUTH PASTE.—VAN LINT. (La Policlinique, Feb. 1, 1912). In a young girl having tubercular dacryocystitis with a skin fistula, the author injected Beck's paste into the inferior canaliculus, resulting in cicatrization in fifteen days. M. D., trans. by J. F. C.

Yellow Ointment and Cauterizations With Nitrate of Silver in Acute Conjunctivitis.—Kaz, R., S. Petersburg (Klin. Mon. f. Aug., 50, I, May 1912, p. 563), sets forth, from his observations on over 100 cases and from literature, the almost abortive effect of yellow ointment in epidemic conjunctivitis with swelling of the conjunctiva, which bacteriologically gives no constant aspect and may develop in scrophulosis or subsequent to influenza, but by no means in certain bacteriological findings or any clinical picture of acute conjunctivitis. In subacute conjunctivitis K. cauterizes the conjunctiva with nitrate of silver and prescribes drops of sulfate of zinc at home with borated vaselin. Sometimes he saw good results from yellow ointment. C. Z.

OINTMENT SCARLET RED IN THE TREATMENT OF EYE DISEASES.—NANCE, WILLIS O., Chicago, Ill. (*Therap. Gazette*, Aug. 15, 1912). The writer refers to a previous article of his on this subject

published in the Journ. of Ophth. and Oto-Lary. February, 1911. Since then he has employed the treatment almost daily and his later experience has justified his belief that in this remedy we have a safe therapeutic agent of value. He is satisfied that scarlet red has a useful and valuable place in ocular therapy. Its especial effect in corneal disease is to incite and accelerate regeneration of stroma, thereby encouraging the process of cicatrization. It apparently has no antiseptic properties. Cases of ulcer of the cornea treated with scarlet red assuredly heal quicker than those in which it is not used. He employs the ointment made by Parke, Davis & Co., and has noticed no irritation of the eye following its use.

He gives the following indications for its use in eye work: Ulcers of the cornea, perforating corneal wounds, loss of corneal tissue from pterygium operations, conjunctival injuries, loss of integument of the lids or other instances in which there is a loss of tissue.

A small bit of the ointment the size of a pea or larger is introduced two times a day into the conjunctival cul-de-sac in corneal diseases and a bandage applied. In loss of integument it may best be applied to the edges of the denuded surface. The use of the ointment in eye diseases does not, of course, supplant the use of antiseptics, mydriatics, etc., which should be employed as indicated. The ointment has the advantage of being easily obtained and is inexpensive.

C. H. M.

TUBERCULIN IN DISEASES OF THE EYE .- MACKAY, GEORGE, Edinburgh (Report of the 1912 meeting of the Brit. Med. Assoc., The Lancet, Aug. 17, 1912). The reader of this paper proposed first to examine the status of tuberculin as an aid to the diagnosis of ocular tuberculosis; to consider the preparation and method of application; and, further, the importance of making a differential diagnosis between the human, bovine and avian varieties, and the means at their disposal for discriminating between these. The subcutaneous injection of small doses of the original tuberculin, he thought highly of: Calmette's ophthalmo-reaction had a most restricted applicability, owing to its danger; von Pirquet's reaction was safe, simple, but only moderately reliable; whilst Moro's was much less reliable. He did not think it possible to distinguish between human and bovine tubercule by these means. He next dealt with the values of the opsonic index, or phagocytic index, as he preferred to call the reaction. The method was undoubtedly difficult and tedious, the personal equation entering largely into the results obtained, but these examinations had taught them much, and they were still of

value in cases of difficulty in diagnosis. As regarded tuberculin in treatment, the safest preparation appeared to be Koch's New Tuberculin T. R., whether human or bovine; it caused the least violent reaction. Where more powerful effects were desired, the bacillary emulsion (B. E.) might be employed. They had sufficient evidence to show that if initial doses were small the increase was gradually made, and the inoculations were not too frequent, the clinical condition and the absence of local reaction might be taken as guides without repeated observations on the opsonic index. No hard-andfast rules of dosage could be laid down, the personal reaction of each patient had to be considered and they must bear in mind that their aim was not so much to flood the patient with massive doses of antibacterial material, but rather to stimulate his own tissues to produce this material for himself. The speaker then proceeded to consider illustrative cases of tuberculous disease and his experience in treating them. Phlyctenular conjunctivitis was often associated with tuberculous lesions of glands and bones, but he was diffident in assuming a phlyctenule was a pure tuberculous lesion. Some of them he had evidence to show were definitely staphyloccic lesions. Some, on the other hand, appeared to be due to mixed infections of tubercle with some variety of coccus, and this was particularly the case in patients who were liable to a series of ocular lesions of slightly different order. Considering the deeper affections, interstitial and punctate keratitis, he showed that certainly some of these cases were due to tuberculous manifestations, the diagnosis and the treatment on the lines described had been of the utmost value, and it was a distinct warning not too hastily to assume that an interstitial lesion was syphilitic. Other cases again reacted to both tuberculous and syphilitic tests, so that there was doubtless the double diathesis. He believed that in tuberculin they had a valuable remedy, if judiciously employed, both for diagnosis and for treat-101111111 ('. II. M.

Tuberculin in Diseases of the Eye.—Ritchie, L. C. Peel, Edinburgh (Report of the 1912 meeting of the Brit. Med. Assoc., The Lancet, Aug. 17, 1912). The reader of this paper dealt with the methods of blood examination in tuberculous diseases of the eye. First, one had to remember that while the blood might give evidence of the presence of some particular organism infecting the system, that in itself did not necessarily furnish the cause of the eye infection. Further, there was the possibility of more than one variety of infecting agent being present. The best evidence could be obtained

in cases in which the eye was apparently the sole seat of infection. In many cases there were other lesions which complicated matters. At first they were compelled to make a large number of blood examinations for a variety of organisms, but with experience the range of the examination became limited, and latterly inoculation tests and treatment had been carried out on a number of patients without any examination of the blood. After detailing his methods of blood examination he went on to show that the differentiation between the various types of tubercle bacillus was of high practical importance; in certain types of cases the bovine type of infection was found to be especially common, and evidence had been obtained that treatment of such cases with the human type of tuberculin was ineffective. As regarded the methods of inoculation treatment adopted with tuberculin and other vaccines, their object was to avoid objectionable reactions, to permit of the continuance of the treatment over long periods and to make it suitable for outdoor patients. The general principle was to keep the patient constantly under the influence of small doses of fairly uniform amount, but tending to gradual increase, never to diminish the dose, to avoid hypersensibility by giving the earlier doses at short intervals, while later, as the conditions tended to come under control, to increase the intervals C. H. M. and also the dose.

Tuberculosis of the Eye Treated With Tuberculin.—Krusius, Berlin. (Wien. Klin. Rundschau, May 19, 1912). Intracorneal vaccination with a large dose of bovine tuberculosis, produces frequently only after several months a complete spontaneous cure. Tuberculin neither shortens the duration of the disease, nor does it have a specific curative effect.

The prophylactic use of a bacillary emulsion has a small immunizing effect against intracorneal vaccination with tuberculin. J. G.

THE EFFECT OF SALVARSAN ON THE EYE.—FEJER, JULIUS. (Wien. Klin. Runschau, April 28, 1912). Most of the publications on this topic take into consideration the neurotropic effect of salvarsan; very few authors examined its effect on vascular tissues, such as the chorioidea.

In three cases the author found that salvarsan produced such a copious exudate into the optic nerve and into the vitreous as he had never before been able to see.

J. G.

THE USE OF SALVARSAN IN DISEASES OF THE EYE.—STEPHENSON, SYDNEY, London (Report of the 1912 meeting of the Brit.

Med. Assoc., The Lancet, Aug. 24, 1912). The reader of this paper said that most were agreed that the best mode of administering salvarsan was by intravenous injection. As regarded dosage, the aim should be not so much to relieve the local symptoms as to cure the underlying disorder. At least two or three maximum doses should be administered at intervals of a few days. Some of the poor results attributed to the drug were probably the result of inadequate dosage, for some had held that small doses resulted in the production of resistant strains of spirochaetae. In the use of the drug there should be frequent determination of the Wasserman reaction, quantitive as well as qualitative. It had been shown that the administration of salvarsan did not prevent the appearance of new syphilitic symptoms during the period of administration, just as was the case with mercury; this was due to the presence of "nests" of organism, which escaped the action of the initial dose. Experience showed that tertiary symptoms appeared earlier after the use of the drug than under ordinary treatment, and to some extent it could be said that the type of syphilis was altered by the new treatment. These appearances were most frequent after the use of small doses of salvarsan, and pointed to inefficient treatment. There was a strong tendency to the use of mercury conjointly with and after the injection of salvarsan with the object of preventing these late symptoms.

General symptoms, seen after the injection of the drug, such as pyrexia, insomnia, sweating, nausea, headache, restlessness, and so forth, were probably the effect of faulty administration rather than of the salvarsan. It was of the utmost importance that the solvent should be freshly distilled water. In eye disease particularly it was of the first importance to prevent local reaction, or the delicate tissue of the eye might be further damaged; such reactions were commoner when insufficient doses were employed. Recently it had been shown that salvarsan was contra-indicated in severe vascular lesions of the eye with a tendency to haemorrhage.

The influence of the drug on the optic nerve was of the first importance to ophthalmic surgeons. Ehrlich had shown in his long list of collected cases that only one case of nerve defect had been found; later workers had averred there was danger to the nerve; but the balance of opinion was distinctly in favor of the drug's innocuous character as regarded the healthy optic nerve, and also that it could be administered safely and with great advantage in syphilitic affection of the nerve. Ehrlich's observations were now two years old.

There was no unanimity of opinion as to the curative effect of

the new product in ocular disease. At most it appeared to offer one more antisyphilitic remedy, the exact place of which was as vet uncertain. In interstitial keratitis of inherited syphilis, for which mercury was well-nigh useless, salvarsan had on the whole given no better results. A few surgeons had reported good results, but the majority thought the malady little influenced by it. The relief of photophobia was fairly generally attributed to it. Those who claimed good results from its use were accustomed to give several injections. An interstitial keratitis of acquired syphilis was readily relieved by it, but so it was by mercury. As a rule iridocyclitis or secondary syphilis responded well to the drug and much more quickly than it did to mercury; improvement was generally found the day after the injection. It appeared that when properly given salvarsan presented no particular danger to the body or to the eye; it was most likely to be useful in primary and secondary manifestations, particularly of conditions affecting the uveal tract, but it was well to combine it with mercury.

C. H. M.

THE EFFECT OF SALVARSAN ON THE EYE.—IGERSHEIMER (Wien Med Woch, May 30, 1912). The injection of salvarsan in dogs and rabbits did not produce any changes in the eyes, but in cats there appeared in the retina cell degeneration. After a subacute intoxication there appeared only a slight degeneration of the optic nerve fibres, while after a chronic intoxication the degeneration of the optic nerve fibres was more marked.

In man, the author believes that the so-called recurrences of optic nerve affections are not due to arsenic intoxication, but to the syphilitic virus.

A paralytic who was treated for a long time with salvarsan showed postmortem no histological changes in the optic nerve. According to the author salvarsan acts favorably on syphilitic affections of the retina and optic nerve. It seems to be less effective in iritis and in muscle paralysis it shows no effect whatever.

In keratitis parenchymatosa one injection of salvarsan shows no effects whatever; in some cases good results were observed after the injection of two or three doses.

In congenital syphilis salvarsan is more efficacious than mercury.

J. J.

SALVARSAN IN CHRONIC IRIDO-CHORIODITIS.—BRANDES (Ann. de la Soc. Med. Chir. d'Anvers, Vol. XVI, p. 189), reported a patient having chronic syphilitic irido-chorioiditis and whose vision

had been reduced to faint light perception and the fundus could not be seen. Brandes injected 40 etgrms, of salvarsan and prescribed mercurial inunctions. Three days later the patient counted fingers at one meter; seven days later another injection of salvarsan was given; four days after this injection it was possible to distinguish with the ophthalmoscope the pale discs; three days later the vision was 16/200 in one eye and 20/100 in the other.

M. D., trans. by J. F. C.

ON THE EXECUTE SALVARSAN ON THE EXE-FINE OSCIE (From the eye department of the Rudolf Virchow-Krankenhaus at Berlin. Centr. f. prakt. Aug., 36, June, 1912, p. 163), reports on his experiences with salvarsan and gives the following resume: In none out of 2,700 syphilitic patients, treated with salvarsan, a damage to the optic nerve has been observed. The forms of optic neuritis, seen after the treatment, presented the same ophthalmoscopic aspect and the same course as those discovered before the injection, which partly had been treated elsewhere with mercury. Likewise the other ocular affections, which occurred after salvarsan treatment, remained in the scope of pure relapses of lues. Only in one case of paralysis of the third nerve in tabes there was reason for assuming a casual connection. A striking cumulation of relapses on the eve could not be ascertained. Iritis and neuro-relapses on the optic and ocular nerves were decidedly less frequent within the last year which is to be attributed to the more energetic salvarsan treatment now adopted. The therapeutic failures of the first period of salvarsan treatment must not be charged to salvarsan, but to the insufficient doses, for the curative results have become better with the perfection of the methods. We have now learned to give 10 times the former doses without detriment to the organism and especially the eye. The best results were noted in those ocular affections, in which also mercury is very effectual. The action of salvarsan is undoubtedly faster and more energetic. It is of especial value when irreparable damage is to be feared in longer durations of the syphilitic process. In affections in which mercury is of doubtful value not too much must be expected from salvarsan. It helped, however, in a series of cases where Iodin and mercury failed. It will take decennia to gain a final judgment on the value of salvarsan. Our experiences so far are such that there is no reason for pessimism, and it is our duty to continue our efforts for trying Ehrlich's remedy, which is at least a valuable addition to our weapons against syphilis. C. Z.

Salvarsan Cases.—Goldzieher, W., Budapest (Cent. f. prakt. Aug., 36, May, 1912, p. 129). A man, aged 22, was almost totally blind from iridocyclitis, seclusion of the pupil and secondary glaucoma. The right eye had no sensation of light, the left only slight, with uncertain projection. The attempt to cut out a piece of iris failed, but the intraocular tension was diminished and the pain relieved. As the history revealed a former syphilitic infection, 0.45 salvarsan was injected into a vein. A wonderful improvement of the eyes was noticeable on the second day, which was still greater after a second injection of 0.35 after two weeks, with L. V. 5/10, R. return of perception of light in temporal visual field. Ten days later a broad iridectomy was performed on each eye, and inunctions ordered. The concomitant deafness was also much improved. It apparently was due to a syphilitic affection of the auditory nerve.

Case 2. A gumma of the size of an apple at the left upper orbital margin of a man, aged 30, healed at once after an intravenous injection of 0.5 salvarsan. The simultaneous gumma of the larynx subsided more slowly. G. says that the effect of salvarsan is the more sure, the more certain the syphilitic nature of the eye trouble is. Not every ocular affection in a syphilitic person is syphilitic, as illustrated on a man, aged 25, with diffuse chorioiditis and hyalitis, who gave very positive Wassermann's reaction. V. diminished under salvarsan, while tuberculin treatment, continued for quite a while, gave good results.

G. had the most brilliant results in recent syphilitic iritis, (the ordinary, papulous or gummatous forms), much faster than with the most energetic mercurial treatment. Salvarsan was also effectual, although not as fast, in luetic ocular palsies, especially total paralysis of the third nerve. It had no effect whatever in parenchymatous keratitis and pigmented chorioditis in hereditary syphilis, which G. considers as metasyphilitic, and atrophy of the optic nerve from central causes. Not quite certain was the result in recent chorio-retinitis and optic neuritis, in which G. prefers energetic mercurial inunctions.

Finally G. mentions a case in a man who had overcome by mercurial treatment various severe syphilitic attacks, also hemiparesis. He developed a leftsided retinitis with a peculiar solid exudation, so that the central portion of the fundus was converted into a white mass with a greyish spot at the macular region. This healed after intramuscular injection of salvarsan, but a diffuse syphilitic retinitis with perivasculitis developed in the so far healthy eye, so that there was no sterilisatio magna.

C. Z.

The Effects of Salvarsan of the Eye.—Reese. Robert G.. New York (N. Y. Med. Journ., June 29, 1912). The writer begins an interesting review of this subject by stating that the only contraindication to the use of salvarsan in ocular lues is simple atropy of the optic nerve. The reason for this opinion is that there are no cases of tabes dorsalis or general paresis that have been benefited by its use, and in instances of spinal atrophy of the optic nerve—which sometimes accompanies these parasyphilitic affections—the administration of salvarsan has apparently hastened the inevitable end.

The writer considers that the deleterious effects in man are inconspicious when one finds that more than 60,000 cases have received this potent arsenical compound with no authentic case of amaurosis following its use. In the hundred cases in which the fundi were examined by the writer prior to the injection of salvarsan, and reported by Fox and Trimble, it had no injurious effects on the eye in any way.

He alludes to the wonderful benefits in syphilitic iritis in both secondary and tertiary manifestations.

Regarding neuroretinitis, he says: "Routine examination of the fundus in syphilitic cases, which has now become the rule, reveals the fact that mild degrees of optic neuritis are common in syphilis, even without salvarsan, and therefore the neurorecidives are due to syphilis and not to salvarsan." He reports good results in iritis papulosa, parenchymatous keratitis, and chorioretinitis, and it is a standing rule to refer all patients with syphilitic eye lesions—except those with simple atrophy of the optic nerve—to another department for intravenous injection of salvarsan. Opinions differ greatly as to its effacy in parenchyamatous keratitis due to hereditary lues; and in unilateral disease it is only rarely possible to protect the healthy eye.

His conclusions are: (1) Salvarsan is a powerful symptomatic remedy for the treatment of luetic eye lesions. (2) It certainly merits attention, especially in combination with mercury and iodine (3) Its action is more rapid than that of mercury, but it should not replace that valuable remedy, except in selected cases. (4) It should be given intravenously for quick action and for the comfort of the patient. (5) It should not be given in simple, spinal, non-inflammatory atrophy of the optic nerve. C. H. M.

THE INFLUENCE OF DIATHERMY IN THE INTRAOCULAR TENSION.
—CLAUSNIZER, TH. (From the eyeclinic of Prof. G. von Schleich in the University of Tubingen. Klin. Mon. f. Aug., 50, I, June, 1912,

p. 755), reports on his observations on intraocular tension after the application of heat on the human eye by means of alternating currents of high frequency for therapeutic purposes. Measurements with Schioetz's tonometer showed no influence on normal eyes, excepting a striking diminution of tension in two cases. In inflamed eyes (chronic iridocyclitis, iritis, parenchymatous keratitis), diathermy increased the intraocular tension, almost to twice its former height. Besides this, C. regularly observed dilation and change of the round shape of the pupil with decidedly sluggish reaction, in two cases difference of both pupils, injection of the eyeball, hyperemia of the iris, which occasionally assumed a yellowish green tint. Hence the author emphasizes that this kind of heat application to the eye is not absolutely harmless.

C. Z.

ON THE INFLUENCE OF MASSAGE ON THE TENSION OF NORMAL AND GLAUCOMATOUS EYES. KNAPP, PAUL (From the laboratory of the eyeclinic of Prof. C. Mellinger in the University of Basel. Klin, Mon. f. Aug., 50, 1, June, 1912, p. 691). After a review on the history of massage, K. reports his investigations on 112 normal, 12 glaucomatous, and 19 eyes operated on for glaucoma, with the following results: 1. Massage of the eyeball reduces, in a few minutes, the tension of normal eyes considerably. 2. Within 3 of an hour the intraocular tension returns to the normal, but with varying rapidity in different cases. 3. After massage no increase of albumen in the aqueous could be ascertained. 4. In acute glaucoma massage is generally ineffectual. In slight glaucomatous attacks and in simple glaucoma it lowers the tension, but this returns to its former height after 15 minutes. 5. The effect of massage on eyes, operated on for glaucoma, is more intense and enduring, and may be recommended as after treatment for augmenting the capability of filtration of the scar. 6. In rare cases of glaucoma massage slightly increases the tension. 7. Repeated instillations of holocain diminish the tension in a large number of normal eyes. The intraocular tension was measured with the tonometer of Schioetz. C. Z.

THE EXPERIMENTAL TREATMENT OF TUBERCULOSIS OF THE EYE WITH RADIUM.—FLEMMING AND KRUSIUS (Wien. Med. Woch. Feb. 3, 1912) the therapeutic effect of the radio-active rays (radium and mesothorium) is very small in comparison with the effect of the rays of the sun. Tubercle bacilli were not affected by radium even after hours of radiation. At an altitude of 5-6000 meters the rays of the sun are three times as bactericidal as at a lower level

Pannus Trachomatosus Cured With Blenorrhoele Virus.—Goldzieher, Prof., Budapest (Wien. Klin. Woch., May 2, 1912). As early as in the twenties of the last century Jaeger recommended the use of trachoma virus in the treatment of severe forms of trachoma. This method of treatment did not meet with much approval, because by it the cornea was in danger of becoming affected. Inasmuch as in pannus the cornea on account of its dense vascularization, is more resistent, the author applied the blenorrhoeic virus to the eyes of a 9 year old girl who was suffering with a dense pannus in both eyes, and an ulcer of the cornea in the left eye. The result of the treatment was excellent. After suppuration had ceased, the opacity of the cornea was so fine, that it could be detected only by means of oblique illumination. The ulcer of the cornea in the left eye had also healed.

J. G.

MEDICO LEGAL

ACTION FOR THE LOSS OF A BLIND EYE. (London Letter, Jour. A. M. A. June 29, 1912). A case has been tried before the Court of Appeal in which a workman who had lost the sight of one eye from an accident was subsequently able to obtain work because the defect in his sight had not been observed. As the result, however, of a second accident the blind eye had to be removed and he was thus prevented by the obviousness of the defect from obtaining work. By a majority of two to one the Court held that the words "incapacity for work" in the Workmen's Compensation Act must be interpreted strictly, and that the man was not entitled to compensation from his employer for the second accident, because his incapacity for *performing* work was the same after it as before, incapacity for obtaining work only being the result of the second accident. The case has now come before the highest court in the country, the House of Lords. Here the judgment of the Court of Appeals has been reversed. In giving judgment the Lord Chancellor said that in his opinion, in the ordinary and popular meaning of the words, there was incapacity for work when a man had a defect which rendered his work unsalable in any market reasonably accessible to him, and that in like manner there was partial incapacity when his work was rendered less salable. The opposite view would leave a workman uncompensated for what might be a real and direct consequence of an injury. The case was accordingly remitted to the arbitrator for the assessment of compensation.

This legal decision as to the soundness of the abilty to compete K in the formula of Magnus and Würdemann is an evidence of progress as to economics in the legal profession. The precedent thus established in English law by its highest court formally fixes this factor for all British countries and will no doubt be soon established in American law as well.

H. V. W.

MEDICAL SOCIOLOGY

VOCATIONAL DISABILITIES DUE TO DEFECTIVE COLOR SENSE. -A. Handicap More Common Than Generally Supposed (Scientific American Supplement, Aug. 3, 1912). "That many persons not actually 'color blind' in the extremest degree are nevertheless afflicted with a weakness or partial defectiveness of this ocular power" is the statement made by Dr. Alfred Guttmann in a recent number of Die Umschau. "The so-called 'color blind' are neither blind to colors, nor do red and green look the same to them. But they confuse a remarkably large number of colors (red and green among them), between which the normal eve discriminates." The ability to distinguish colors by the normal eye and the color blind are discussed and compared and the subjective aspect of color blindness considered. "The diagnosis of color blindness is not such a simple matter as has been heretofore believed." "Dr. Guttman. therefore, earnestly advises the careful inspection of all school children, at least a year before leaving school, by competent physicians, with respect to this faculty, so that they and their parents may be advised as to those trades and professions for which they are imperfectly fitted. Such examination would eliminate many 'misfits', and, therefore, redound to the advantage both of employers and employees." M. D. S.

SAVING INFANTS' EYES.—(Medical Review of Reviews, July, 1912). The law passed in Massachusetts in 1905, requiring the reporting of cases of ophthalmia neonatorum remained a dead letter until 1910, when the State Board of Health was given an annual appropriation of \$2,500 to be used for the prevention of this disease. Physicians were supplied gratis with a silver nitrate solution and efforts were made to educate physicians and public alike as to the necessity of preventive treatment. "Physicians have been prosecuted (and some fined' for failure to observe the Reporting Law—ten doctors to date.") In a report issued by the Social Science Department of the Massachusetts Eye and Ear In-

firmary it is stated that, "While babies still become blind, the percentage of neglected cases has been cut almost two-thirds in the past three years. The doctors of Massachusetts and not midwives are responsible for blindness due to Ophthlamia Neonatorum. Out of 388 cases under observation at this infirmary, 360 had been attended by physicians and only ten by midwives."

M. D. S.

ON OCCUPATIONAL DISEASES OF THE EYE.—HOLDEN, WARD A.. New York (Medical Review of Reviews, June, 1912). The writer discusses briefly but ably various phases of this subject. He says in the Ne wYork City clinics lead and wood alcohol head the list of accidental eye poisons. There are 150 trades in which lead is used sufficiently to be dangerous. He mentions the difficulty in some cases of a differential diagnosis between intracranial pressure and lead poisoning and refers to the book on industrial lead poisoning published a year ago by the National Bureau of Labor. He mentions various ways in which wood alcohol is used and describes injurious results. He believes liquor dealers from wholesalers down should be instructed as to its poisonous nature, and that druggists should be compelled to label it "poison" under whatever trade name they sell it. Among many other important mayter, he refers to the excellent work of the American Museum of Safety and says, "Federal and State workmen's compensation laws, which automatically assess damages for injury, must soon here, as already in most European countries, entirely take the place of our antiquated employer's liability laws which necessitate wasteful suits in court to obtain damages." M. D. S.

MISCELLANEOUS

Making the Blind Hear Light.—Fournier d'Albe's Optophone (Scientific American Supplement, Aug. 3, 1912). The "Optophone" is designed to enable "totally blind persons to recognize, locate, and even measure light by means of the ear. It is based upon well-known property of selenium of changing its resistance under the action of light. The principle on which the optophone is constructed is the following: A current from a small battery is sent through a network of four conductors known as a 'Wheatstone bridge.' Two of these conductors are wire resistances of a few hundred ohms each, the third is a selenium 'cell' (now more appropriately termed a 'selenium bridge'), and the fourth is an adjustable resistance, made of graphite deposited on

ground-glass or unglazed porcelain. When the first two resistances are in the same ratio as the last two, then no current will flow across the network. But a current will flow as soon as one of the resistances changes, as does that of selenium under the action of light. It is this current, made audible in a telephone, which is utilized in the optophone." The instrument consists of two parts, is light and portable and requires very little current, a single pocket "refill" sufficing for days of working. It is believed that great possibilities of aid to the blind may lie in this instrument.

M. D. S.

REFLEX PAIN IN OCULAR CONDITIONS,-Brown, SAMUEL HOR-TON, Philadelphia (American Medicine, Aug., 1912). The writer calls attention to the fact that previous to 1872 and for a long time afterward, glasses were prescribed only when vision was defective. He points out the manner in which astigmatism may produce headaches. "They may be frontal or temporal, either side or both, but they are seldom occipital, parietal, or nuchal." The author traces carefully the origin and distribution of the fifth cranical nerve in order to show the close relation of the central portions of this nerve with the other cranical nerve. To confirm the findings of the important relationship between the fifth nerve and the eyes, especially as regards the production of referred pain, he points out in various clinical conditions the manner of this relationship, as in herpes zostic ophthalmicus, bleparospasm, conjunctivitis, certain forms of ulcers, iritis, and glaucoma. He concludes "that reflex pains may be the cause or the result of ocular conditions, and that this probability becomes increased the closer the association of the symptoms with the distribution of the fifth nerve." M. D. S.

Some Effects of Bright Light on the Eyes have been investigated by Dr. J. Herbert Parsons of London, Eng. (Jour. Amer. Med. Assn., Dec. 10, 1910. Editorial Amer. Med., June, 1912), "and we are constrained to say that American ophthalmologists have sadly neglected this field though they have a profusion of cases in our more sunny climates. It is amazing that they should actually surrender the leadership to one practicing in a foggy, smoky, cloudy city wheere the inhabitants do not know what sunshine really is. Parsons apparently shows that the ultra-violet rays are the dangerous ones, and that for ordinary amounts of light, they as well as the infra-red are completely absorbed by the cornea, aqueous and lens. Few reach the vitreous and none the retina.

Where they are too strong to be thus stopped, as in glass blowers and metal workers, they cause cataract. Incidentally he shows that people vary greatly in their perceptions of the colors at each end of the spectrum, some of us being blind to what causes red or violet sensations to others. Red-blindness therefore amounts to a normal protective variation as red rays are very irritating and it must be much more common than supposed. Perhaps those cases so injuriously affected by red light have too great a range of light perception, and we have a hint as to why red-free illumination is becoming so popular with printers and other night workers. Babies appear to absorb more of the short rays than adults, and the lower animals show great variations probably because of their differing habitats. Parsons quotes numerous other European investigators who have described the pathologic changes in the lens and capsule after excessive light exposure. Unfortunately he does not make a distinction between the hyperesthesia or irritation (davblindness) of moderate exposure and the hypoesthesia (night blindness) or exhaustion of longer and greater exposures." H. V. W.

THE INFLUENCE OF ELECTRIC, ACETYLENE AND OIL HEAD-LIGHTS UPON NIGHT OPERATION OF TRAINS AND TRAIN SIGNALS.— NEWCOMB, JOHN RAY, Indianapolis, Ind. (Ophthalmic Record. March, 1912). The author's conclusions are as follows: The electric headlight interferes with correct reading of signals when opposing the vision. When the vision is opposed by high power headlight the distinctness with which the signals can be observed varies with the lateral distance of the signal from the headlight, greater interference taking place with high candle power headlight and tapering off to no interference with oil headlights. In the cases of electric headlights the interference was so great that the average distance at which the signals could be correctly read was reduced to such an extent that high speed trains under the usual air line pressure, would not have been able to come to a full stop before reaching the signal. High candle headlights on approaching trains have no influence on the accuracy with which signals may be read, providing there are no opposing headlights of high candle power and the signal lights are burning properly. If any of the signal lights are not burning, false signals are obtained with the high candle power lights which are apt to be read as true signals. The zone of these false signals obtained with the electric and acetylene headlight approaching signal is situated between 1,500 feet and 400 feet from the signal. With approaching oil headlights no false signals are obtained. With acetylene and elec268 Muscles.

tric headlights, representing a high candle power headlight, false signals are obtained. None of the headlights tested sufficiently illuminated the track to avoid striking small objects and for large objects would result only in being able to reduce the speed at which they would be struck. Only the electric headlight sufficiently illuminates the track to warn of its approach to an observer when an observer is screened from the direct rays of the locomotive headlight and is looking across the tracks. It is difficult to make an approximate estimation of the distance of any of the headlights tested from the observer, when in their direct rays.

G. I. H.

MUSCLES.

A NEW MODE OF MEASURING MUSCLE BALANCE.—MADDON. ERNEST E., Bournemouth, England (Oph. Review, June, 1912).

The writer describes a new test for the ocular muscles which is supplementary to the glass rod test and measures cyclophoria and all other deviations in near vision simultaneously, also the difference between the physiological and geometrical quandanture of the retina which was indicated by Helmholtz though doubted by more modern authorities. The new test requires only two small sheets of celluloid, of complementary colors, such as green and red, and capable of being held together and gliding over one another. Each sheet is perforated with a suitable pattern, so that on holding the combination up to the sky the perforations in each are illuminate and colored by the other, the background remaining dark since almost no light passes through both colors.

On looking at these patterns through the spectacles provided for Snellen's "Friend" test, the eyes are disassociated, and the patient, by gliding one celluloid over the other attempts to set the two patterns in their original true relation to each other. The surgeon can meanwhile watch with interest how the two patterns gradually separate and rotate, reproducing exactly as they do so, the increasing displacement of the patient's eyes. The two sheets are now gripped by an ordinary letter clip, which preserves their relation and enables the various deviations to be examined and measured at leisure.

Since this test works by the movement of objects instead of the movement of images, therein differing from previous tests by prisms, rods, or neutralizing colors, the patterns are displaced in the same direction as the eye that sees them instead of in the opposite direction like the images in other tests.

C. H. M.

INVESTIGATIONS ON THE POSITION OF REST OF THE EYEBALL.-LEMPP, HANS. (From the eye clinic in the University of Berlin. Zeit, f. Aug., 27, 1, June, 1912, p. 487). The position of rest is the position which is communicated to the eyeball by the ocular muscles and the mechanical conditions of the orbit, its contents and surroundings. As the position of rest of the globe plays a great part in all theories of strabismus, and orthophoria, i. e. the parallalism of the visual axes, was considered as the normal position of rest, although not proven, L. tested this assumption by examining 425 persons of all ages. The tests were limited to persons of equally good bilateral vision and perception of depth. In anomalies of refraction the examinations were made with and without correcting glasses. The person was placed opposite a scale of Maddox, adjusted for 5 m., in the center of which was a light. This was fixated, and a Maddox rod placed alternately before each eye, which changed the picture of the light into a vertical red band of light. The eye behind the rod assumes its position of rest and the person names the place of the picture of the eye on the scale. In consequence of the great dissimilarity of the retinal images fusion is relatively little stimulated. Out of 103 emmetropes 30 1/4% had orthophoria, 39 1/2 esophoria; 30 1/4 exophoria; out of 193 hypermetropes 22 2/3 orthophoria, 46 1/2 esophoria; 31 exophoria; out of 129 myopes 23 1/3 orthophoria, 36 1/3 esophoria, 40 1/3 exophoria. The figures indicate the minimum of the detacable deviations, but L. is convinced that heterophoria commands a larger percentage of positions of rest. According to Bielschowsky, the degree of mental concentration plays a great role in concealing the deviation, as fusion increases with alert attention. Therefore neurasthenics contribute a greater contingency of heterophoria.

L. concludes from his investigations, that orthophoria is merely one of the physiological positions of rest. It occurred in 25 1/2% of all persons examined, whereas esophoria was the most frequent in 40 1/2, and exophoria in 34%. Any regular dependence of refraction or age was not noticeable. It rather had the appearance, as if the position of rest was due to a coincidence of nervous-muscular and mechanical elements, favorable for one or the other position.

C. Z.

INVESTIGATION INTO THE RELATION OF OCULAR IMBALANCE AND AUDITORY AFFECTIONS.—BRADRURNE, A. A., Manchester, Eng. (Report of 1912 Meeting of the Brit. Med. Assoc., The Lancet, Aug. 24. 1912). The reader of this paper said that Hunter, Fleurens and Purkinje had noticed ocular effects in disturbance of the body

270 Muscles.

balance, facts that were established by Goltz. Later it was shown that these disturbances were due to excitation of the semicircular canals. Body balance was so intimately connected with binocular vision and the sensations of the auditory canals that it was not unreasonable to anticipate ocular symptoms in disease of these canals. He had investigated seven cases of labyrinthine disease, and in all but two the vetrical meridians of one or both eyes tended to lean outwards at the upper end. In the two exceptions the proof of the ear disease was not sure. In cases of temporo-sphenoidal abscess there had been found a disturbance of the horizontal levels of the eyes. In a number of post-operative cases of ear disease he had found similar defects; the vertical meridians were at fault in six, and the elevation in five. Allowing for the possibility of ocular imbalance antedating the ear disease in some, yet the frequency of the finding of eye defect seemed to point to a casual connection.

C. H. M.

MINER'S NYSTAGMUS.—ELDRIDGE-GREEN, F. W., London (Brit. Med. Journ., May 18, 1912). The writer believes the cause of this condition to be the necessity for movement of the eye in order to be able to see with the fovea. He has shown that the fovea is blind when there is no visual purple in it, and this diffusion of the visual purple into the fovea is caused either by light falling on an adjacent portion of the retina containing rods or by movement of the eye. In the conditions usually obtaining in a mine sufficient light does not fall upon adjacent portions of the retina and so the eye is in continual movement. It is easy to see how the repetition of this unnatural movement may cause nystagmus. C. H. M.

THE ETIOLOGY AND TREATMENT OF MINER'S NYSTAGMUS.—BROWNE, F. J. and MACKENZIE, J. Ross, Abertillery, G. B. (Brit. Med. Journ., Oct. 5, 1912). The writers' article is based on the consideration of 100 consecutive cases. The factors contributing to the production of nystagmus in miners are not numerous, and, arranged in order of relative frequency and importance, are: (1) Inadequate light, (2) errors of refraction, (3) straining of ocula: muscles, (4) neurotic temperament.

That inadequate light is an important cause is conclusively proven by the fact that 99 per cent. of these cases had been using the locklamp for a number of years.

Ninety per cent. of the cases had errors of refraction; of these. 48 per cent. had astigmatism, 27 per cent. myopia.

The straining of the extrinsic muscles of the eyeball is the result

271

of the two foregoing factors, the workman had his eyes fixed in a staring, strained position for long periods, either downwards and laterally, as in narrow seams, or upwards, as in wide seams.

They regard the inability, on the part of a very large number of men with nystagmus, to concentrate their physical or mental powers in any particular line of action much more as the cause than as the effect of nystagmus. The severe headaches and aching eyes of which these men complain are accounted for by errors of refraction and straining of the eyes; the vertigo, by inco-ordination of the ocular muscles; the conjunctivitis and photophobia by the sudden frequent change from darkness into dazzling light.

Regarding prevention, the writers contend that this resolves itself into medical examination of all men engaged to work underground, and the periodical examination of all underground workers, for (a) the presence of refraction errors, (b) any signs of incipient nystagmus, (c) physical or nervous debility. To this must be added the importance of adequate light. In this connection it appears surprising that even in the most up-to-date collieries there is, as yet, no indication of electric light being used throughout the workings. They are satisfied that if such precautions were taken and electric light installed in all working places in collieries, or electric lamps capable of giving light for at least eight hours supplied to all underground workers, miner's nystagmus would soon be unknown, while serious accidents to workmen and consequent loss to employer would much more rarely occur.

The curative treatment may be summed up in a single sentence, "Rest, strychnine, and the correction of refraction errors."

C. H. M.

NYSTAGMUS IN MINERS.—ELWORTHY (Wien. Med. Woch.. March 30, 1912). The author is of the opinion that the nystagmus in miners is produced by diminished illumination. Most of the miners live without daylight; they go to and come from work when it is dark, and work with small flickering lamps. Another cause of the nystagmus he claims to be the excessive exertion of the eyes.

Miners' nystagmus could be avoided by allowing every workman a daily 4-5 hour stay in the daylight, by improving the lamps, and by painting the different objects in use in the mines white or green

J. J.

A New Operation for Squint. -Harman, Bishop, London (Lancet, May 25, 1912). In devising this new operation, the writer

272 Muscles.

aimed to secure success without the difficulties associated with advancement operations especially the necessity for confinement to bed with both eyes bandaged, by easy and expeditious steps. Thirty-three patients operated upon had been out patients, only one eye was bandaged in each case, and the results were satisfactory.

The operation consists in exposing the edges of the tendon to be shortened and reefing with special forceps. It could be varied according to the degree of squint: (1) the extent of the reefing or shortening of the tendon could be varied by the adjustment of the reefing forceps; and (2) in high degrees of squint the sutures used to secure the reef were carried forward so as to advance the reef.

The steps for the operation (say for convergent squint) were 1. Securing the eye by the insertion of an anchor stitch at the limbus; this avoided fixation forceps, and the stitch was used to fix the eye in abduction at the end of the operation. 2. Locating the tendon. It was pointed out that there were distinct color differences in the conjunctiva, according as tendon or Tenon's capsule was beneath it. These differences were marked in the young. 3. Two button-holes were cut through conjunctive right to the sclera above and below and parallel to the edges of the tendon between the insertion and the canthus. 4. The surfaces of the tendon were rasped with a squint hook, the edges of which had teeth; this stimulated the production of adhesions when this part of the tendon was folded. 5. The reefing forceps were applied to the tendon. The forceps were like squint hooks whose short flat handles fitted together and were adjustable, so that the hooks coincided or separated by varying widths. Working from the outer canthus one blade was slipped beneath the tendon, and the other blade above the tendon and under the conjunctiva. When the forceps were turned from the outer canthus to lie across the nose the tendon was folded over or reefed. 6. The base of the reef was then fixed by appropriate sutures. If the squint was of low degrees the operation was then finished. If it was of high degree the sutures were carried forward and fixed into the sclere at the lumbus, so that tying the sutures advanced the reef and further abducted the eye. 7. Finally, the eye was completely abducted by means of the anchor stitch; this was fixed to the skin of the canthus with strapping. By this means relaxation of the antagonist of the operated muscle was produced, and it protected the reef from too early strain. The eye was bandanged, the spectacles worn with a blinker beside and half covering the open eye, so as to cause the patient to look towards the operated muscle. The anchor stitch was removed the third day and the reefing stitches on the tenth day. C. H. M.

Some Experiments to Ascertain the Security of Sutures FOR SQUINT OPERATIONS.—HARMAN, BISHOP, London (Lancet, May 25, 1912). The writer says that in squint operations four modes of placing the scleral sutures were possible. The part that traversed and gripped the sclera might be placed (1) in line with the axis of the tendon and at right angles to the limbus; (2) across the axis of the tendon or parallel to the limbus. Further, each of these sutures might be made with a single or a double thread. To find out which of these possible modes gave the greatest security Mr. Harman had made experiments with artificial materials and their tearing strain under weights. The conclusion was that a double silk thread placed in the sclera across the axis of the tendon, and therefore transversely to the strain of the suture, had a carrying power from 12 to 18 per cent. greater than the other three modes. He had found these experimental data confirmed in practice. For that reason he inserted his stitches, as above described, in advancement operations.

The Operative Treatment of Concomitant Strabismus.—Campbell, E. Kenneth, & Alexander, G. F., London (Lancet, June 1, 1912). The writers indicate the advantage of advancement over tenotomy in these cases and explain the limitations of increased traction when either lateral rectus muscle is advanced. They are in favor of advancing both externi in internal squint and when the latter is of any considerable degree they advise advancing the external rectus of one eye to the extent sufficient to correct half the degree, and, preferably after four or six weeks, obtain a slight primary over-correction. When double advancement is insufficient, tenotomy is added. In cases of a degree beyond the power of a double advancement to correct tenotomy should be done first, since its effects are so variable, and after four or six weeks its action supplemented by the necessary advancement.

The writers give the following method of advancement as simple, preserving the conjunctiva and Tenon's capsule, apposing the tendon firmly to the sclera and permitting easy removal of the stitch. The conjunctiva and capsule of Tenon are divided by scissors down to the sclera vertically over 1 cm. just outside the cornea; the flap of conjunctiva and capsule is raised from the sclera and tendon by the closed scissors blades; the tendon is secured close to its insertion by forceps, and its insertion and other

attachments to the sclera severed by the scissors. A short, nearly straight needle, threaded with extra stout silk, is passed from without inwards through the tendon, at the point determined by the effect desired, just within is lower border, first including the hem of the flap. It is then entered in the sclera vertically just outside the cornea, 2 mm. below its horizontal diameter, to emerge 2 mm. above this line, and then carried from within outwards through the tendon, just within its upper border at the level of its first transit, afterwards again taking in the hem of the flap. The ends of the thread are then tightened in a running knot until the tendon is firmly strapped down to the subjacent sclera, when they are firmly knotted; and lastly, the tendon in front of the knot is removed by scissors.

C. H. M.

To the Technic of Advancement of Ocular Muscles.— Elschnig, A., Prag. (Klin. Mon. f. Aug., 50, I, July, 1912, p. 48). describes and illustrates his method by a figure in the text. The muscle is fixated by a suture in the center and the upper and lower borders, through the superficial layers of the sclera, which prevents its escape and allow of a smooth spreading of the muscle on the sclera without puckering. The muscle ought not to be much exposed, but be left in connection with its sheaths and Tenon's capsule, so that the contractile muscular substance is not destroyed. Only thus the muscle is preserved in its full integrity and is prevented from becoming adherent to a larger surface of the eyeball, which would impede its motility. E. operates principally without general narcosis.

MYOPIA.

EYE TRAINING FOR THE CURE OF FUNCTIONAL MYOPIA.—BATES, W. H., New York (N. Y. Med. Journ., May 18, 1912). The writer explains that in functional myopia the eye is adjusted for near vision without permanent elongation of the optic axis, as is found in true myopia, that the defective vision is usually improved by concave glasses, and that the local and prolonged use of sulphate of atropine has not always relieved functional myopia. He speaks of its universal and frequent occurrence and states that in more than 10,000 school children it was responsible for nearly all the eye pain, asthenopia, headache, defective vision and irritability.

He claims that children, when entering school, usually have normal vision, and that in a short time, a few weeks, they acquire functional myopia; that most persons with functional myopia were un-

conscious of the effort made to see distant objects, and that they were benefited after they become conscious that an effort lowered the vision. The method which he used to relieve the functional myopia is described as follows: "The children were directed to regard the smallest letters they could see on the Snellen card at more than ten feet and to note their clearness. By partly closing their evelids, by staring or otherwise making a voluntary strain, they observed that the letters became blurred. It was then suggested that they regard the card without effort. The alternate strain and relaxation were repeated until the patient was convinced that an effort to see distant objects lowered the acuity of vision; while, regarding the card without effort made the vision better. The exaggeration of the unconscious effort was usually followed by a greater relaxation of the effort to see distant objects. The simultaneous use of the retinoscope indicated improvement, less functional myopia, and the vision improved. A large amount of compound myopic astigmatism, 4.D., has been observed with the retinoscope in a normal eye during the time the patient made an effort to read the Snellen card with the evelids partly closed. With each succeeding effort the myopia became less until it disappeared, and the patient no longer produced myopia by partly closing the evelids and making an effort to see the distant card."

The writer claims that he has benefited functional myopia by instructing patients in eccentric fixation which he claims was frequently found. The simple demonstration of the fact that eccentric fixation lowered the acuteness of vision proved to the patient the necessity of central fixation in securing the best vision and was successful in relieving many cases of functional myopia promptly.

The writer also claims that an effort to read by a dim light at 13 inches or less benefited functional myopia.

He claims that the maximum amount of functional myopia under atropine cured by eye training without glasses was 2.50 D. He recommends the use of the Snellen test card at 10 feet as the best distant object for such training, advising that such charts be placed in school rooms and that distant vision be exercised in the manner indicated above for a few minutes each day, claiming remarkable results from such regular practice.

C. H. M.

TO THE QUESTION OF MYOPIA.—JASPER. IGNATZ (From the eye clinic of Prof. L. Bach in the University of Marburg. Zeit. f. Aug., 27, 1, June, 1912, p. 495), reports statistical examinations of the material of the clinic, with the following conclusions: 1. Out of

37,484 patients 2,998 were myopes, i. e. 7.99 per cent. Anisometropia of 2.00 D., and more, occurred in 495 16.5 per cent. 2. The frequency of myopia declines with the higher degree of myopia. 3. The highest degrees of myopia are more frequent in women than men. 4. In the low degrees the near workers predominate, in the higher degrees the non-nearworkers. 5. Of complications, staphyloma, respectively conus, predominate, which are more frequent in men than women. All other complications occur more frequently in women than men, and, with the exception of divergent strabismus, more in non-nearworkers than nearworkers. 6. The acuteness of vision of myopes decreases, the higher the degree of myopia. 7. The vision of mon-nearworkers is less than that of nearworkers, especially in the higher degrees of myopia. C. Z.

OPERATIONS.

TREPHINING THE LIMBUS FOR ADHERENT STAPHYLOMATOUS LEUCOMA.—H. COPPEZ, Brussels (*Trans. Belg. Oph. Soc.*, April 28, 1912), obtained an excellent result in a case of adherent staphylomatous leucoma by trephining the limbus, following the method of Major Elliot.

M. D., trans. by J. F. C.

Definite Resection of the Outer Orbital Wall.—Gifford, H., Omaha, Nebr. (Ophth. Record, March, 1912). The author recommends the following procedure for tumors in the outer half of the orbit: (1) Horizontal incision two and one-half to three inches long, beginning one-quarter inch from outer commissure, care being taken not to open into the conjunctival sac. (2) Wide separation of lips of wound and shoving back periosteum from outer side of bone. (3) Removal with strong bone forceps of outer margin of orbit and as much of outer wall as desired. (4) Opening the periosteum of the orbit and proceeding as usual.

Gifford states that the operation leaves a less disfiguring scar, and the sinking in at the site of the removed bone is so slight as to be practically unnoticeable, and is more than compensated for by the simplicity of the operation. The article is illustrated with two photographs of two patients he has operated upon in this manner.

G. I. H.

NEW OPERATIVE PROCEDURES.—ZARIN, Olmütz (Wien. Med. Woch., July 27, 1912). In one case of sarcoma of the ciliary region the author succeeded in the removal of the tumor without

enucleating the eye. The eye collapsed immediately after the operation, but on the next day it refilled again. The eye was saved.

Another new procedure reported is one for squint operation. After a tenotomy on one eye the effect is increased by placing a suture in the opposing muscle of the other eye, and fastening the suture with adhesive plaster to the skin of the face. The patient stays in bed with a binocular bandage and after 24-48 hours the suture is removed. The result is favorable and the dissected muscle is compelled to adhere to the new place.

In senile ectropium of the lower lid the intramarginal space is incised until it reaches the outer canthus, and then the incision is prolonged in a horizontal direction through the skin of the outer commissure and sutured.

J. G.

IMPLANTATION OF FAT IN CASIS OF ENCLEATION AND EXENTRATION OF THE EYEBALL.—WALDSTEIN (Wien. Klin. Rundschau, Sept. 22, 1912). Fat can be implanted in all cases of enucleation and exentration excepting in cases operated on for malignant tumor and acute mycotic iridocyclitis. This procedure can be employed in cases where considerable time has elapsed since the enucleation. In one case of eventration, where owing to an intraocular infection the implantation of fat was contraindicated, eight days after the exentration, the thick contents of the eyeball were aspirated, paraffin was injected, and later the fat was implanted.

J. G.

ON FAT IMPLANTATION INTO TENON'S CAPSULE AFTER ENU-CLEATION.—TSCHIRKOWSKY, W., Kasan. (From the eye clinic of Prof. Th. Axenfeld in the University of Freiburg i. Br. Klin. Mon. f. Aug., 50, I, May, 1912, p. 573). The fault of all methods of supplanting an enucleated eyeball was that the employed material acted as foreign body, produced inflammation and was finally expelled. T. enumerates these in a review, starting with the glass globes of Mules, then the balls of rubber, glass wool, asbestos, silver, aluminum, ivory, celluloid, Caoutchouc, elder marrow, glowed bone of cattle, eyes of animals. All these have been superseded by the method of Barraquez-Bartels of implanting fat, based on the principle of auto-plasty. Its advantages are: certain sterility, lasting tolerance by the human organism, and not being easily absorbed. The clinical observations, so far published, show with certainty that the volume of the implanted fat in time grows smaller, but apparently not in a high degree.

T. reports on the fat implantations, made within the last two years at the clinic of Freiburg, after 35 enucleations and 2 eviscera-

tions, arranged in tabular form. The fat, taken from the skin of the abdomen, is introduced and pressed into the conjunctival sac and, after the tendons of the ocular muscles are brought in contact with each other, a loose tobacco pouch suture is made with silk, which is removed after a week. At first catgut was used, but it was too soon dissolved and caused a macerating secretion. The submerged catgut sutures for uniting the tendons were no success, as the wound frequently broke open. After normal healing a prothesis could be inserted after from 7 to 9 days. The results were very good and the method is recommended.

C. Z.

A NEW OPERATION FOR Prosis.—Komoto, Prof., Tokio, Japan (Cent. prakt. Aug., 36, August, 1912, p. 225), devised a new method, by transplanting a strip of cutis, without epithelium, under the skin of the lid for creating a direct connection between ciliary margin and skin of the forehead. A piece of skin, over 1.5 cm. wide and 4 cm. long, is cut out of the upper arm after removing the superficial epithelial layer with a scalpel and also detaching the subcutaneous adipose tissue with scissors. One end of the excised strip is split into two legs, and each end provided with a doublearmed thread. Then a crescent of skin close to the border is cut off from the upper lid and each leg of the strip is sewed on the lid border. The thread of the other end of the strip is now brought into the eve of a very broad curved needle. This needle is carried with a needle holder from the wound under the skin to the evebrow. The strip is now pulled up until the palpebral fissure has the desired width, and sewed into the wound of the skin. The eye is dressed with borated vaselin and the sutures are removed after a week. As the transplanted cutis is apt to shrink and thus increase the initial result, K. advises to make at first the palpebral fissure smaller. C. Z.

To the Technic of Iridectomy.—von Mende, Mitan (Klin. Mon. f. Aug., 50, I, May, 1912, p. 540), devised the following method of iridectomy in cases in which the lance shaped or von Graefe's knife are not applicable. After instillation of a 3 per cent. solution of cocain, from about \(\frac{1}{4}\) to \(\frac{1}{2}\) ccm. of a 2 per cent. solution of novocain are injected near the limbus, (with a few drops of adrenalin, which, however, is omitted in glaucoma). Then a triangular shaped rounded conjunctival flap of from 6 to 7 mm. is formed, with a base of the length of the intended corneal section, and dissected with scissors, exposing the scleral portion of the limbus. Then the left hand fixates the eyeball by holding the conjunctival

flap with the forceps, the right hand incises the scleral portion of the limbus with a scalpel, about 1 mm. from the corneal margin, in an oblique direction. The bleeding is rather profuse if no adrenalin has been used, and requires frequent sponging. A small blunt scissors enlarges the incision to the desired length. By lifting the corneal flap the iris can be thoroughly inspected and excised in the usual manner. The conjunctival flap is replaced and sewed. After four days the bandage can be left off.

M. recommends his method in extensive adherent leucomas, in which only a narrow marginal portion of the cornea is intact, in subacute glaucoma with intense mydriasis, and acute glaucoma with shallow anterior chamber and very atrophic iris. The results were very good, i. e. M. succeeded in performing a regular iridectomy without injuring the lens.

C. Z.

Two Cases of Myopic Retinal Detachment Cured by Total Sclerotomy — Operative Technique.—Bettremieux, Roubaix (Trans. Belg. Oph. Soc., April 28, 1912), presented two myopic patients, having retinal detachment and on whom he had practiced simple sclerotomy. In the first case, in whom the detachment produced phenomena of metamorphosis, and which affected the lower half of the ophthalmoscopic field, there only remained a grayish aspect of the retina within the limits of the explorable field. This case has remained cured after two years. In the second case there was detachment of the external ophthalmoscopic field; meanwhile, vision was restored.

Technique of the operation: local anesthesia with cocaine-adrenalin suffices; as a rule the operation is done at that part of the sclera tangent to the lower border of the cornea. The conjunctiva and sub-conjunctiva tissues are dissected with care for a length of 12 mm.; the sclera is seized with special forceps, having a perpendicular point at each extremity; the incision is made with a Graefe knife; the opening made is 10 mm. long and 2 mm. wide. The operation is completed bu suturing the conjunctiva.

M. D., trans. by J. F. C.

NEW OPERATIVE TREATMENT IN DETACHMENT OF THE RETINA AND HIGH GRADE MYOPIA.—HOLTH (Wien. Med. Woch., Feb. 3, 1912). In cases of detachment of the retina a piece of the sclera was excised subconjuctivally with a trephine without injuring the chorioid. The tension was then diminished for weeks and months, and in two cases the detachment of the retina disappeared, and the field of vision became enlarged but vision itself did not im-

280 Optics.

prove. The most important point was that in one case the myopia decreased from 18 D to 5 D, in another from 16 D to 10 D and in a third case from 12 to 5.5 D.

The author explains the effect of the operation as follows: In the first months after the operation subchorioideal lymph oozes through the opening in Tenon's capsule and on account of this the absorptive capacity of the choroid is increased. By the traction of the outer eye muscles the walls of the myopic eye become compressed, and the myopic refraction becomes diminished.

After the operation one of the patients stayed in bed with the eyes bandaged up and the myopia diminished only from 18 D to 16 D. During the next three weeks the eye was not bandaged and the myopia decreased from 16 to 8 D. It is therefore important to keep the patients in bed but without bandaging the eyes.

J. G.

OPTICS.

Some Physiological Considerations in Lighting Problems, THE IDEAL SYSTEM COULD BE A COMBINATION OF DIRECT AND IN-DIRECT LIGHTING.—SCHALLER, W. F. (Scientific American Supplement, Sept. 21, 1912). Theories of vision are considered, and glare is defined and discussed. "Correct illumination is secured by the use of proper shades for the direction, diffusion and diffraction of the light rays and the proper location of the sources from which they issue. It is interesting to consider some points which tend toward relieving the strain imposed on the eye when working by artificial illumination. Such relief may be obtained, granted that the design of the system is such that a proper amount of light is shed on the work, subjecting the eye to a more or less regular set of 'ocular gymnastics.' This may be done by offering a place of rest to the eve when it leaves the work, by having a lower intensity on the walls and ceilings than on the work. A slight movement of the muscles takes place in opening the pupil for the lower light value, and this is reversed when going back to the desk. When this idea is carried to the extreme, however, a distinct effort becomes necessary to adapt the pupil to the large change, and muscular fatigue results. A set of experiments, consisting of periodically raising and lowering the voltage on the lights in a room and so varying the illumination very slightly proved very restful to the eyes. If the eye has been fixed on a number or series of objects of the same shape, size, or color for a length of time, distinct relief may, of course, be obtained by fixing it on something having greatly different properties." "After consideration of the points brought out it would seem that an ideal system of illumination would be a combination of indirect and direct, producing a condition of low general illumination with a local higher intensity at the places of work."

M. D. S.

RECENT PROGRESS IN ILLUMINATION, Report of a Committee Appointed by the Illuminating Engineering Society.—(Scientific American Supplement, Oct. 26, 1912). Under progress in gas lighting among other things are mentioned the extensive introduction of artificial silk mantles, the interest in the rise of high pressure lighting, the use of incandescent lamps by photographers, and the adoption of a standard specification, calling for gas fixtures of better and more uniform quality. The most important change of the past year in incandescent lighting has been the very wide-spread adoption of the drawn wire tungsten filament. Tungsten wire can now be drawn of much smaller diameter than has previously been available. The metalized filament carbon lamp has found its place for usefulness in the rapid replacement of ordinary carbon lamps for nearly all purposes. Under new types of illuminant are considered the production of artificial light for color matching purposes. One type of intensified arc with a carefully adjusted glass screen of a highly ingenious character has come into use with good results. Two similar forms based on tungsten lamps with colored screens have also appeared. Here are also considered the Moore carbon dioxid tube and the mercury vapor lamp with the rhodamine reflector. The neon vacuum tube lamp producing a light of extraordinary color is described, and the quartz mercury arc lamp mentioned. One of the results of technical research "has been the suppression of the ultra-violet bugaboo by making it clear that under the condition of practical illumination, natural or artificial, there is substantially nothing to be feared from ultra-violet radiation, in which the light of the sky and that of several important commercial illuminants is somewhat rich." The photometric researches of the past year have furnished important facts which are briefly mentioned, as along the line of heterochromatic photometry and methods for eliminating the idiosyncrasies of the eve through the use of selenium and other light sensitive cells. Indirect and semi-direct lighting have received much attention.

MAKING ARTIFICIAL DAYLIGHT.—FRANKLIN, ROBERT (Technical World Magazine, Sept., 1912). "Running around the ceiling of a room at the Bureau of Standards, in Washington, is a glass tube about three inches in diameter, filled with silvery white light. It

gives a very brilliant illumination, and in color is the nearest approach to the light of the sky that has been obtained up to date. The pipe, nearly a vacuum, contains a small quantity of carbonic acid gas, which is rendered luminous by passing a mild current of electricity through it. An interesting point about this kind of light is that it has already come into industrial employment, being used-by reason of its likeness to daylight-in silk mills and other places where textile materials are manufactured or handled, to make sure that perfect 'matches' of the goods are obtained." Other gases used there in glass tubes are helium and neon, the latter an ingredient of ordinary air. The newest idea for obtaining artificial daylight is to combine a mercury vapor tube with the tungsten incandescent lamp. For this purpose the tungsten lamp (which gives off many red rays, wholly absent in the mercury glow) is placed in the middle of a ring-shaped glass tube containing mercury vapor. Then both are enclosed in a big ground-glass globe. The effect is that of an enormous luminescent opal, most beautiful as well as agreeable to the eye." Since a high temperature is required to get white light resembling daylight, the usefulness of the rare metal, tungsten with a melting point of over 5,400 degrees Fahrenheit is very great. It gives three times the amount of light for a given power as the carbon filament, and is proportionately more economical. M. D. S.

OPTIC NERVE.

Hereditary Optic Atrophy With X-Ray Findings.—Bruner, W. E., Cleveland (Arch. Ophth., Sept., 1912, XLI. 435), reports a case of hereditary optic atrophy, with X-Ray findings, which showed much enlarged sphenoidal cells which the author believes may be a factor in the causation of the optic atrophy. The case described showed the clinical findings of a case of hereditary or familial optic neuritis and atrophy of the Leber type. X-Ray examination showed a marked lateral enlargement of the sphenoidal cavity, with projection upwards of the floor of the sella turcica, and no evidence of any retention. Irrigation of the sinus was negative. An X-Ray examination of a sister of the patient, who also had optic atrophy, showed enlarged sphenoidal cells, and the same condition was present in a nephew who had optic atrophy. X-Ray examination of other members of the family, who did not have any optic nerve involvement, showed much smaller sphenoidal cells.

The author does not feel warranted in drawing any definite con-

clusions from the study of one family and urges that X-Ray examinations be made of cases of hereditary optic atrophy.

The article is illustrated.

W. R. M.

Choked Disc and Its Palliative Treatment.—Siegrist (Corr. Blatt. Schweizer Aerzte, 1912, No. 14), considers Schieck's theory the most plausible and scientific. The increased intracranial pressure with augmentation of the cerebrospinal fluid is the most essential momentum. These mechanical causes produce the choked disc. Inflammatory symptoms are absolutely absent in fresh cases. Schieck found in all his cases ectatic cavities in the axial string next and between the central vessels. Two currents of fluid meet, where the central vessels enter the optic nerve in the optic sheath, the one comes from the eye, the other from the brain. Both are conducted outward in the perivascular sheaths of the central vessels. Stocking of lymph in the intervaginal space is the most important cause of choked disc; perhaps the only cause in the plurality of cases.

Every well developed choked disc does harm to the nerve fibres and leads to optic nerve atrophy.

It is therefore necessary to diminish this cranial pressure, as it benefits the choked disc, before the vision has suffered materially, as not all patients with choked disc die; many regain their health spontaneously or after general or local treatment (Meningitis serosa, Spyphilitic cerebral affections, Pseudocerebral tumor, Turmschaedel). The eyes should not be neglected during the period of reconvalescence. Choked disc must be recognized early and treated directly. This is possible by trepanation of the skull or by lumbar punction, which eventually can be repeated. As long as the vision has not suffered, so long can be waited with attacking the choked disc, it will be sufficient to treat the underlying cause. As soon as the visus begins to fail it will be necessary to counteract the intracranial pressure, first with lumbar punctions, when a cranial tumor or abscess cannot be localized with certainty. In these cases no time should be lost with lumbar punctures, but trepanation should be resorted to immediately. When this is done early and with all cautions, as mentioned by Kocher and Horsley, it is not as dangerous as many think, and it is also warranted to be performed as a palliativum. It is a big difference, if a seriously sick man is also blind or not. Besides the trepanation removes in prognostically unfavorable cases mostly the disagreeable vomiting and the unbearable headache. Moreover cures have happened in cases, which looked unfavorable, after trepanation at the right time, respectively early.

Siegrist reports three cases where a decided benefit was reached with lumbar punctures, in one case repeated even five times.

E. E. B.

ON DECOMPRESSION OPERATIONS IN DISEASES OF THE OPTIC NERVE.—BEDNARSKI, A., Lemberg (Arch. f. Aug., 72, 1, p. 84), reports the clinical histories of six cases of acquired and congenital hydrocephalus, oxycephalus, brain tumor, with choked disc, atrophy, or amblyopia without ophthalmoscopic changes. In five the puncture of the corpus callosum according to Anton-Bramann was performed, in one lumbar puncture. In none the operation was followed by complications, not even rise of temperature. In some an improvement of central vision, in others of the visual field was observed. Two cases showed that the puncture of the corpus callosum may have good results even in advanced optic atrophy, and is to be recommended. The best and lasting results were obtained in acquired hydrocephalus. In congenital hydrocephalus it depends upon the case. In oxycephalus the experiences are too scanty for a definite conclusion. B. found in 30 out of 59 cases of diseases of the optic nerve in children affections of the brain, (encephalitis, meningitis, respectively hydrocephalus), showing that in children cerebral affections are the most important and dominating causes of diseases of the optic nerve. C. Z.

CLINICAL AND MICROSCOPICAL CONTRIBUTION TO SOLITARY TU-BERCULOSIS OF THE OPTIC DISC.—JACOBS, M. W., St. Louis, Mo. (From the eye clinic of Prof. Th. Axenfeld in the University of Freiburg i. Br. Klin. Mon. f. Aug., 50, II, July, 1912, p. 37), gives the clinical history and anatomical description of the enucleated eyeball of a case of a large solitary tubercle of the optic disc and nerve, and retina, with slight participation of the uvea, ciliary body, and root of iris. The patient, a man, aged 17, also suffered from tuberculosis of the nose, pharvnx, larvnx, and conjunctiva with dacryocystitis, necessitating the extirpation of both tear sacs. But his vision deteriorated before these affections set in, so that the tuberculosis of the disc most likely was the first manifestation of tuberculosis. In concordance with the observations of Verderame, there was no rise of intraocular tension, and the anterior segment of the eyeball was without irritation, until a violent iritis developed with amaurosis, when the eye was enucleated. The numerous tubercles behind the lamina cribrosa indicated that it was Orbit. 285

the highest time for enucleation, perhaps even a little too late, on account of the possible danger of a propagation in the optic sheathes to the meninges. Therefore the author concludes that, although expectative treatment may appear justified in solitary tuberculosis of the eyeball (if the sclera is not perforated or severe secondary complications and blindness do not exist), the solitary tuberculosis in the disc or its immediate surroundings take exception. If the central vision is destroyed, early enucleation with resection of a large piece of the optic nerve, if possible to the optic foramen, is preferable.

The affection of the conjunctiva healed by applications of lactic acid. According to the review of literature by Verderame there was in a relatively large portion of cases of ocular solitary tuberculosis no signs of tuberculosis of other parts of the body, which renders the prognosis quoad vitam relatively good. The ophthalmoscopic and histological conditions are illustrated. C. Z.

ORBIT.

A CASE OF VOLUNTARY EXOPHTHALMIA.—DENHALME. Brussels (Trans. Belg. Oph. Soc., April 28, 1912), reported a young man age 22, who, following traumatism to the infero-external portion of the orbit was able to produce a marked exophthalmus at will by compressing the air in the nose.

By aid of the exophthalmometer of Hertel, the exophthalmia measured 20 degrees in repose and 30 degrees during the exophthalmia.

The author advances as a possible cause, the probable existence of a varicose intraorbital tumor, or a venous angioma.

M. D., trans. by J. F. C.

Contributions to the Diseases of the Orbit.—von Maren-Holtz, Nürnberg (teⁱt. f. Aug., 28, July, 1912, p. 53). A child, delivered in the 8th month of pregnacy, aged 10 days, showed considerable exophthalmus of the left eye, which felt hard and could not be repressed into the orbit. The optic disc was atrophic and the arteries and veins attenuated. From the syphilitic psoriasis of the hands and feet a gummatous affection of the orbit was diagnosed. The child died after two days, and the autopsy confirmed the diagnosis. The dura mater at the left orbital roof was thickened by one-half cm., of yellowish lardeous appearance, also its continuation into the orbital fissure and the optic foramen, so that the optic nerve was fastened in this mass, the septa of the optic

286. Orbit.

nerve, the intima of the ophthalmic artery to about four times its volume, and the connective tissue between the orbital fat. ophthalmic artery was obstructed by a thrombus. The optic disc projected about 3 mm. towards the vitreous, the retina was detached by an exudation between the pigment layer and that of the rods and cones, and the optic fibres were thickened to about four times their normal size. The retinal and chorioidal vessels were filled with blood, and hemorrhages were found around the optic disc. The right optic nerve was by one-third larger than the left, had a pale bluish color, and its fibres showed a slight atrophy of the medullary sheathes. The whole process apparently started, during intrauterine life, with the affection of the dura, and traveled along the optic sheathes and fasciae into the orbit. In all cases of syphilitic affections of the orbit, so far published, the most striking clinical symptom was the exophthalmus, and was caused by an hyperplastic process in the connective tissue originating in the dura and periorbita, never by an orbital abscess.

Case 2. A boy, aged 14, who had nasal catarrh for a few weeks, noticed a protrusion of his right eye with impairment of sight to 6/30. Visual field was not contracted and there were no scotomas. The borders of the disc were indistinct, the veins bluish red and enlarged. The medial upper half of the orbit was infiltrated, and an incision evacuated thick pus. The right middle turbinated body, which was much swollen, was removed. It was almost totally occupied by an ethmoidal cell (concha bullosa), its mucous membrane swollen and covered with pus. After 16 days the exophthalmus subsided, and the patient recovered with V 6/8.

Case 3. A boy, aged 12, while playing, was injured by a lance, which entered at the left lateral orbital margin without damaging the eyeball, followed by intense epistaxis and vomiting. At the examination, two weeks later, there was exophthalmus, eyeball immovable, complete ptosis and absolute iridoplegia. V=0. The optic disc was bluish white and the arteries narowed. Through the enlarger wound M. found the bone rough, but no foreign body. After two weeks the wound was closed and the exophthalmus diminished, but the eyeball fell spontaneously forward, when the patient stooped his head. The lance must have splintered the bones at the apex of the orbit and torn all nerves and muscles with a profuse hemorrhage and subsequent suppuration, which later on was absorbed.

Syphilis of the Orbit—Report of an Unusual Case.—Dodd, Oscar, Chicago (*Arch. Ophthal.*, Sept., 1912, XLI, 472), reports a case of orbital syphilis in a female, aged 31 years.

Orbit. 287

Right upper lid was swollen and covered the eyeball. It was necrotic along upper margin and was held by narrow bridges of tissue at the external and internal angles. A large amount of pus was discharging through these openings and also from a sinus on the temple. Right half of the forehead was swollen. Probe could be passed nearly to the median line and upward to the line of the hair. Probe also passed backwards to apex of orbit. Eyeball was proptosed and fixed at inner angle, and there was no movement upward or outward. Vision 12/200. Operation showed complete destruction of supercilliary ridge at the temporal end, leaving dura exposed. Injection of Salvarsan was made and K. I. and mercury given. At end of six weeks was entirely closed.

The author refers to the literature on orbital syphilis and summarizes as follows: "Syphilitic periostitis may be present at any age, as it occurs from hereditary as well as from the acquired forms; in the acquired form it may occur at any time after the late secondary or early tertiary changes take place * * *. the symptoms may be very similar to those of an orbital tumor, but pain of a neuralgic character is frequently present, which does not usually occur with orbital tumor. The danger of a mistake in diagnosis is greater in children, in whom rapidly growing malignant tumors are more common."

W. R. M.

RELATIVE CLEARNESS OF WHITE AND BLACK LETTERS.—BALCH, Samuel S. (Scientific American, Oct. 26, 1912). "There is a general tendency on the part of railroads to adopt signs with white letters on a black background, not realizing that the black letter on a white background is easier to read and can be seen at a greater distance. This follows in an interesting way from the structure of the retina of the eye. The impression of a letter at the limit of vision is received on the ends of a small bundle of nerves which convey to the brain a sort of mosaic impression. A nerve can only transmit to the brain information as to whether or not a ray of light is falling upon it and when a nerve is partly in the light and partly in darkness the sensation is the same as though all of it was in the light. It follows, therefore, that all nerves on the dividing edge between any black and white area transmit the sensation of light so that all white lines and white areas appear wider and all black lines and black areas appear narrower than they really are. Two black letters in the illustration grow thinner at the limit of vision and are still recognizable, while at the same distance the two white letters grow thicker and cannot be distinguished. There are circumstances when it is necessary to use white letters, but in

such cases legibility will be improved if they are made with a thin stroke and strongly lighted. Black letters are more distinct if made with a heavy stroke."

M. D. S.

PATHOLOGY.

IRIDOCYCLITIS WITH SPECIAL REFERENCE TO PATHOLOGY. COATS, GEORGE, London, Eng. (Report of the 1912 meeting of the Brit. Med. Association, The Lancet, Aug. 10, 1912.) The discussion embraced first, certain recent views on auto-intoxication in relation to eye disease; then of that exceedingly chronic form of cyclitis which is associated with heterochromia and cataract; and last, of certain points connected with sympathetic ophthalmitis. There was a marked tendency to seek the cause of chronic iridoevelitis in poisoning from septic teeth or the intestinal canal. These positions were easy to assume, but difficult to prove or disprove. Since both were exceedingly common conditions, he asked why iridocyclitis was relatively so rare. Doubtless the particular resistance of the individual explained many exceptions. In recent years the presence of indican in the urine has been taken as proof of the presence of intestinal putrefaction, but the test was only of use when there was a persistently increased reaction. A form of extreme chronic cyclitis was that in which there was keratitis punctata associated with heterochromia and cataract, the affected eye having a lighter colored iris than the normal. Various views were put forward to account for the lesser pigmentation of the diseased eve—either that the pigment was bleached in disease, or that it was a condition original in the patient and indicated either a pure lusus naturae or a congenitally abnormal eye with a weaker resistance to disease. Reviewing these theories, Mr. Coats' view was that the loss of pigment was the effect of the cyclitis, even though the history might indicate that it was long antecedent to the appearance of the disease. Cyclitis was so chronic, its onset so insidious, and the first appearance of precipitates required such careful examination to find, that the early discovery of a pale iris was no matter for surprise. Further, that the bleaching was the result of the disease was strongly supported by the fact that similar bleaching was found in interstitial keratitis and chronic glaucoma. Next, he wished to raise a discussion on another type of chronic iridocyclitis-"sympathetic ophthalmitis." Two points seemed likely to be established by modern research: that the disease was due to a living organism, whether bacterium or protozoon and that this organism reached the second eye, not by the nerves or orbital veins,

but by the general circulation. This implied a specific affinity of poisons toward certain tissues, but it was no more difficult to understand than the specific affinities of certain drugs-e. g., strychnine. Recently Elschnig had attributed the disease to anaphylaxis, a reaction which had been proved of grave import in the injection of repeated doses of foreign albumins into guinea pigs. The suggestion was that with the breaking up and resorption of uveal pigment in the injured eye a hypersensitiveness of the body generally, and more particularly of the homologous organ, the other eye, was produced. Elschnig supposed that this condition could not become effective except in the presence of some constitutional anomaly-e. g., nephritis, diabetes, or auto-intoxication, or a minute lesion in the hypersensitive eye. Part of this hypothesis was obviously at fault, for it was within the experience of all that the disease occurred in healthy robust persons. He also wished to call attention to some cases of very mild sympathetic inflammation, showing nothing more than a little irritation and a few spots of precipitates in the uninjured eye. Were these truly cases of the disease? And if so, was there any pathological criterion whereby a certain diagnosis could be arrived at? On the last point he considered the best delineation and critical analysis of the histology of sympathetic infiltration was that of Fuchs. His own experience led him to believe that the most characteristic feature of all was the widespread of the infiltrations; usually the whole of the uvea was involved, even including the choroid. This was in marked contrast to the most severe infective iritis.

С. Н. М.

On the Etiology of Phlyctentlar Ophthalma.—Robert. J., Kiew. (From the laboratory of the eye clinic of Prof. Th. Axenfeld in the University of Freiburg. Klin. Mon. f. Aug., 50, II, September, 1912, p. 273.) After a very good survey on the different views on the etiology of phlyctenular conjunctivitis and its connection with scrofulosis, upon which the tuberculin tests, especially the cutaneous reaction devised by von Piquet, have thrown new light, the author reports in detail on his numerous experiments on rabbits and guinea pigs, undertaken for studying the tuberculotoxic nature of phlyctenae, assumed by numerous authors, especially Rosenhauch and Weeker, from their experimental researches. As neither in fresh human phlyctenae nor in experimental phlyctenae microbes could ever be found, R. introduced, not the microbes, but only their toxins. His investigations showed that it is possible to produce experimentally on the eyes

of animals formations which clinically and histologically resemble the phlyctenae of man, viz., a solid, circumscribed nodule of mononuclear round cells, which by the admixture of epitheloid cells occasionally may assume the structure of tubercles. They occurred exclusively in animals that had been infected with tuberculosis, or previously treated with tuberculin, after introduction of tuberculin or the toxin of staphylococcus pyogenes aureus. It must be assumed that the phlyctenae are not caused by a local action of the bacilli, but by the products of their metabolism, as never in man or animals micro-organisms were found in the nodules with intact opithelium. Also the negative implantations of human phlyctenae into the anterior chamber of rabbits speak against their bacillar origin. Rosenhauch's and R.'s experiments with introduction of bacterial toxins into the conjunctival sac of tuberculinized animals prove that the phlyctenae are produced without any participation of bacteria, simply by the action of their toxins. Condition for the experimental development of phlyctenae is a tuberculous infection of the organism, as showed by the experimental results and the experiences with phlyctenae of man. R. does not accept the hypothetical exudative diathesis or the intestinal auto-intoxication without simultaneous tuberculosis as the only cause of phlyctenular ophthalmia.

As a further condition an external irritation is assumed. In R.'s experiments this was tuberculin or toxin of staphylococcus, showing as well as clinical observations that the irritation need not be a specific one. It is not excluded, that, besides bacterial toxins, also other elements, as chemical substances, diseases of the nose, irritations by light, etc., may create phlyctenae in individuals, who are under the influence of tuberculous infection, i. e., are scrofhulous. R. considers it unlikely, that octogeneous irritations alone without general predisposition may bring about the aspect of relapsing phlyctenular conjunctivitis.

The question whether the occurrence of phlyctenae at the limbus is always a sign of a special general predisposition, is affirmed for early age, according to statistics, while the isolated phlyctenae in adults is less frequently associated with general disorders, if it is not a scrofulosis acquired in childhood.

R.'s experiments demonstrated that the tuberculous organism, after introduction of bacterial toxins into the conjunctival sac, may also react with violent conjunctivitis, while healthy animals under the same conditions did not react. This is in concordance with the frequent catarrhal affections without bacteria in scrofulous individuals. While the conjunctiva of rabbits was very sensitive, that

of tuberculous guinea pigs did not react to the staphylococcus toxin, but they frequently presented opacities of the cornea. This perhaps may help in elucidating the question as to the origin of scrofulous corneal affections, and the observation of Raehlmann that from 70 to 75 per cent of all cases of trachomatous pannus occurred in scrofulous patients. Rubert's investigations clearly proved that under the influence of the toxin of tuberculosis the resistance of conjunctiva and cornea is impaired, and corroborate experimentally the clinical observation of Axenfeld in scrofulous persons, that the organism reacts to the same noxa in different and characteristic manner.

PHYSIOLOGY

MIGRATION OF RETINAL PIGMENT IN THE EYES OF BRANCHIPUS GELIDUS.—HOWLAND, RUTH B. (Journal of Experimental Zoology, Vol. 11, No. 2) made experiments with Branchipus, a Phyllopod, with a view to determining the effect of the varied heat and light on the migration of the retinal pigment. After giving the histological methods and describing the normal structure of the eye, she summarizes her results as follows: The effect of light and dark on the movement of pigment granules in the eye of branchipus gelidus is in the nature of a readjustment rather than a proximal and distal migration. The distal pigment is not influenced by variation in light intensity. In light, the pigment granules collect closely around the rhabdoms, protecting them from too intense stimulation. In the dark, the granules move laterally and are readjusted so that they become more evenly distributed through the cytoplasm of the retinular cells. The time occupied in complete readjustment is between four and one-half and five hours. The cytoplasm of the retinular cells serves as a reflecting apparatus in a weak light in the absence of accessory cells. Changing temperatures have no appreciable effect upon pigment migrations, higher temperatures causing almost instant death. Branchipus gelidus is positively phototropic. Animals exposed to light after remaining in the dark five hours were negatively phototropic.

E. E. B.

THE SIGNIFICANCE OF PHOTO-CHEMISTRY FOR THE THEORY OF VISION.—VON KRIES, PROF. (Scientific American Supplement, Oct. 19, 1912.) The writer discusses the anatomy and physiology of the retina, giving particular attention to the visual purple. "A given quantity of absorbed radiant energy, no matter what its

wave length may be, always produces the same bleaching effect upon the visual purple. The visual purple is not directly bleached and destroyed by light, but is first transformed into a yellow pigment, which is practically reconverted into visual purple in darkness. A retina which has become yellow by exposure to light regains some of its purple hue in darkness, but in successive repetitions of the process the color gradually becomes fainter and finally vanishes. Neither the nature of the chemical changes produced in the visual purple by light, nor the manner in which these changes effect physiological results, is yet known. The proportionality between chemical change and absorbed energy indicates a storing of radiant energy. The 'photo-chemical efficiency,' or the fraction of the absorbed energy which is consumed in chemical work, varies exceedingly in different photo-chemical reactions. According to Warhig it is 46 per cent in the ozoning of oxygen, and only 2 per cent in the decomposition of ammonia. Weigert deduces from Brown's observations a photo-chemical efficiency of nearly 100 per cent for the syntheses effected by chlorophyl under the influence of sunlight. The photo-chemical efficiency of the visual purple has not been determined." The visual purple, therefore, may be recommended to the photo-chemist as a very promising object of M. D. S. study.

ON AN ENTOTIC PHENOMENON SYNCRONOUS WITH THE SYSTOLE.—Solger, B., Neisse (Cent. f. prakt. Aug., 36, May, 1912, p. 135), observed at early morning, when looking, with the back to the window, at a wall iluminated by the sun, with half closed lids, a round, well defined spot periodically to appear with the systole and disappear with the diastole. Most likely it is the picture of the pupil. During the systole the iris receives more blood and grows more opaque, and the central area, corresponding to the pupil, thereby appears lighter than its surroundings. During the diastole the difference between the peripheral and central areas becomes less and the light spot disappears.

C. Z.

ON THE PATH OF THE PUPILLARY REFLEX.—KARPLUS, J. P., and KREIDL, A. (From the Physiological Institute in the University of Wien. Klin. Mon. f. Aug., 50, I, May, 1912, p. 586), contest the surmise of Bamke and Trendelenburg, (Klin. Mon. f. Aug., 59, reviewed in Ophthalmology), that the pupillary reflex fibers penetrate, or surround the cerebral peduncle, and then proceed between both peduncles to the central ventricular grey substance. Karplus and Kreidl proved experimentally on cats and monkeys,

that the pupillary fibers run in the optic tract, without reaching the external geniculate body, then between both geniculate bodies through the arm of the anterior quadrigeminal body where they can be traced to the anterioateral margin of the anterior quadrigeminal body. Wherever they were severed on this course, the excitation of the peripheral part (towards the chiasm), was without influence on the pupils, whereas excitation of the central part (towards the quadrigeminal bodies), promptly elicited contraction of both pupils. Cats and monkeys, kept alive for quite a time, after the pupillary fibers in the arm of the anterior quadrigeminal body were cut, showed complete reflex immobility of both pupils to light, while the pupils reacted on accommodation and convergence and changes of psychical condition.

ON THE CONTRACTION OF THE PUPIL IN NEAR VISION.—HESSE, ROBERT. (From the eye clinic of Prof. M. Salzmann, in the University of Graz. Klin. Mon. f. Aug., I, June, 1912, p. 740). The question, whether the contraction of the pupil in near vision is dependent upon convergence and accommodation, or only one of these factors, has not been definitely answered. H. reports four cases of paralysis of the oculomotor nerve which he believes determine the dependence of the contraction of the pupil of accommodation. If the paralyzed eye is forced to fixation, the impulse of movement is excessive and causes an excessive secondary deviation of the other, not paralyzed, eye. The direction of this secondary deviation indicates of what kind the impulse was in the paralyzed eye. If S.'s patients were asked to fixate with the paralyzed right eye a near object, which by an appropriate diaphram was excluded from the visual field of the healthy left eye, this eye turned very far laterally, with a simultaneous strong contraction of the pupils. The contraction of the pupil of the not paralyzed eye in spite of the lateral movement of the globe, proved that the contraction of the pupil in near vision is at least also dependent upon accommodation alone. There was no convergence, since the abduction of the not paralyzed left eye demonstrated that the impulse of movement, which the right paralyzed eye received at the attempted adaptation for nearby, was no impulse of convergence but of turning to the left. The objection, that the contraction of the pupil accompanying the lateral movement may have been a light reflex is refuted by case two with complete reflex immobility of the pupil to light. Here the contraction-could not be attributed to a change of the illumination of the fovea.

THE INTRAOCULAR PRESSURE OF THE EXPERIMENTALLY AND VOLUNTARILY MOVING EYE.—LEDERER, RUDOLF, Teplitz-Schönau. (From the eye clinic of Prof. C. von Hess, in the University of Würzburg. Arch. f. Aug., 72, I, p. 1), found by measurements with Wessely's manometer, the canula of which was introduced into the anterior chamber of dead eyes of oxen and the eyes of decapitated rabbits under electric stimulation of the oculomotor nerve, that the contraction of the ocular muscles and the passive movements of the eye, by pulling the conjunctiva with a forceps, produce an undoubted increase of intraocular tension.

For investigating the effect of the associated movements the experiments were made on monkeys who alone present similar conditions to those of man with regard to the co-ordination and motility of the eyes. Attention and fixation of the animals were led in different directions by the use of a pocket lamp. There was no doubt that every movement of the eyeball was occompanied by an increase of intraocular pressure.

Wessely made the same experiment on a man, aged 65, whose left eye was doomed to enucleation, on account of melanosarcoma of the conjunctiva, and found that in normal tension of 25 mm. Hg. extensive lateral ocular movements cause an increase of intraocular pressure of about 5 mm. The author ascribes with the tonometer of Maklakoff on convergence increased pressure, whereas Levinsohn and Grönholm could not confirm this with Schiötz's tonometer. The author ascribes the difference between the experimental results of these authors and his own to the great superiority of the manometric test, with regard to reliability and sensibility, over the tonometer of Schiötz, in spite of its high value and usefulness for clinical purposes.

L. found the explanation of the cause of the increase of intraocular tension in the experiment with the freely suspended ox's
eye. Traction on its muscles did not create augmentation of tension, which, however, at once set in if the posterior pole of the eye
was supported. Evidently the effect of the muscular contraction
on the position of the eyeball may be analyzed into two components, a tangential, which performs its rotation, and another, which
draws the eye backward and raises the tension, because it presses
the eyeball against the orbital tissue. How far these experimental
results may be utilized for the origin of myopia L. does not venture to determine.

C. Z.

REFRACTION AND ACCOMMODATION

TO THE SUBJECTIVE DETERMINATION OF THE REFRACTION OF HYPERMETROPES.—LAUBER, HANS. (From the first eye clinic in the University of Wien. Arch. f. Aug., 71, p. 188.) In testing hypermetropia with glasses it very frequently is not easy to render manifest a larger part of the total hypermetropia, since the patients accept only a relatively too weak glass. To overcome this obstacle, L. recommends the following method: The patient who finds it hard to obtain the accommodation necessary for near work, readily relaxes it, if a stronger convex glass is placed before him for reading. If he now looks from the near to a distant object, he only follows his habit in further relaxing his accommodation. This occurs the more easily, as by the use of the convex glass for near work a more correct proportion between accommodation and convergence has been created than existed before. The relaxation of convergence in looking into the distance is now also accompanied by the relaxation of accommodation. Here coincide physiological and psychological elements for producing the desired results.

C. Z.

Variation in the Axis of Astigmatism in Distant and Near Vision.—Todd, Frank C., Minneapolis, Minn., Opthal. Record, February, 1912. Report of a case necessitating the use of strong cylinders for distant, right axis 65, left axis 120. For near right axis 45, left axis 135. Two pairs of glasses ordered which are satisfactory. The author believes that the variation is probably due to the fact that the eyes rotate when looking at the near point, though this could not be observed while making the examination.

G. I. H.

RETINA

JUVENILE PERIARTHRITIS OF THE RETINA.—VAN DUSE, Gand. (Trans. Belg. Oph. Soc., Apl. 28, 1912.) In a young woman of 24 the author discovered opacities at the posterior pole of the lens, floating opacities in the vitreous and the fundus had the aspect of a neuro-retinitis without prominence of the pappilla. There was periarteritis of the arteries and there were recurring hemorrhages and tiny white spots at the right macula. Clinical examination excluded syphilis and tuberculosis. The probable cause, he tells us, was a pathological state of the internal secreting glands.

M.D., trans. by J. F. C.

296 Retina.

Detached Retina—Its Surgical Treatment.—Maser, G. W., Persons, Kansas. (Journ. Ophth. & Oto-Laryn., June, 1912.) The author reviews the literature on this subject and describes his operation as follows: A triangular flap is made in the conjunctiva at a point between the attachment of the recti muscles. After the hemmorrhage has ceased and the clear sclera is seen, a von Graefe cataract knife is pushed through the sclera, choroid and retina, well into the posterior chamber. Then by turning the knife slightly, the serum is allowed to escape. When the serum is drained, by using the point of puncture as the fulcrum, the retina is further incised. Turning the knife at right angle, the retina is again incised. The operation is made under local anaesthesia. G. I. H.

THE PATHOGENESIS OF ALBUMINURIC RETINITIS.—CHAUFFARD. (Wien. Klin. Woch., July 18, 1912.) The affection begins with either a neuropapillitis or with a diffuse peripapillary oedema combined later with hemorrhagic placques. The hemorrhage is brought about by the increased vascular tension, and by arteriosclerotic changes of the blood vessels; the neuropapillitis is brought about by the increased tension of the cerebro-spinal fluid. The beneficial effect of a lumbar puncture in these cases is easily explained by the above theory. The origin of the placques which are also sometimes found in diabetic retinitis and in retinitis gravidarum is more difficult to explain.

Recently the retention of nitrogen and hypercholesterinaemia were considered to be the cause of the formation of the placques. The placques show the characteristic lipoid reaction. For the formation of hypercholesterinaemia the suprarenal gland is probably responsible. The suprarenal gland compensates the impermeability of the kidneys. The adrenalinaemia causes the increased cardiovascular tone with a hypertension of the blood and of the cerebrospinal fluid. As the kidneys become less permeable the nitrogen and chlorides are retained. The pathogenesis and the character of the albuminuric retinitis is dependent upon the cholesterinaemia, and the prognosis is influenced by the retention of the nitrogenous material.

The treatment of acute albuminuric retinitis is by lumbar puncture, of chronic with appropriate diet.

J. G.

Contributions to the Knowledge of Tuberculous Changes of the Retina.—Rados, A. (From the eye clinic of Prof. E. von Groisz, in the University of Budapest. *Klin. Mon. f. Aug.*, 50, II, September, 1912, p. 330.) A boy, aged 10, had seclusion and

Sinuses. 297

occlusion of right pupil, with typical tubercles on the iris, and reacted locally and generally to tuberculin. As there was no improvement after two months' treatment, the blind and painful eye was enucleated. About a year later the patient died of tuberculous meningitis.

The microscopical changes of the eyeball are reported in detail, with a review of the cases of tuberculous affection of the retina, from literature. The infection started either from the anterior segment of the globe, as in this case, from the iris and ciliary body, or in the posterior. Chorioid and optic nerve appeared healthy, aside of minimal changes, which was very interesting. According to Sattler the tubercles in the retina are the product of a local infection just as those on the serous membrane of the intestines, if a tuberculous ulceration is present on corresponding places. A metastasis is also possible, on lymphogenous and hematogenous paths, as the changes of the blood vessels show proliferation of the cells of the intima and adventitia, which may lead to obliterating endarteritis.

SINUSES

Intra-Orbital Lesions Secondary to the Disease of the Accessory Sinuses of the Nose.—Walters, James E., Lynchburg, Va. (Journ. Ophth. & Oto-Laryn., March, 1912.) The author sums up the anatomical causes of the intra-orbital complications in disease of the accessory sinuses under two heads: (1) Obstruction to drainage, as deflections of the nasal septum, enlarged and diseased turbinates, obstructing polypi or other intra-nasal growth. (2) Defects in the orbital wall, as an abnormally thin orbital wall or even a bony dehiscence in the orbital wall or to weakness due to prolonged pressure or bony necrosis. From these causes may arise either an intrusion upon, or an actual rupture into the orbital cavity. The author believes that trans-illumination and an accurately made skiagraph are of great assistance. Three cases are reported in detail.

MUCOCELE OF THE FRONTAL SINUS.—GALLEMAERTS, Brussels. (Trans. Belg. Oph. Soc., Apl. 28, 1912), reported a case in which the tumor had been growing for three years and had projected across the anterior table of the frontal bone, at the same time breaking through the inferior wall of the sinus, penetrating into the orbit; puncture yielded a brownish stringy liquid.

M. D., trans. by J. F. C.

298 Sinuses.

DACRYOCYSTITIS AND AFFECTIONS OF THE ETHMOIDAL SINUS.— (Wien. Klin. Rundschau, Sept. 29, 1912.) Chronic dacryocystitis is often produced by an affection of the ethmoidal sinus. The anterior ethmoidal cells possess the same important relation to the lachrymal sac as the posterior ethmoidal cells do to the contents of the orbit.

Treatment, therefore, applied to the ethmoidal sinus will sometimes cure an obstinate case of dacryocystitis. All in all the middle nasal meatus plays a more important role in the affections of the lachrymal duct than the lower meatus. The X-ray examination of the sinus, particularly with a lachrymal probe introduced into the tear duct is of great value.

J. G.

Injury of the Optic Nerve Produced by Empyema of the Accessory Sinuses.—Peters, A., Rostock. (Wien. Klin. Rundschau, Aug. 25, 1912.) Empyema of the accessory sinuses bears a close relationship to affections of the optic nerve. According to statistics of Birch-Hirschfeld empyema of the ethmoidal sinus produces more often disease in the optic nerve than frontal sinus empyema. The pathological changes in the optic nerve may be venous hyperaemia of the papilla, optic neuritis or atrophy of the optic nerve. Closure of the central retinal artery due to empyema of the accessory sinuses may also be found in rare cases.

Besides the ophthalmoscopically visible changes in the optic nerve such as stasis, neuritis, atrophy or closure of the retinal blood vessels, there may also be met changes in the field of vision, due to empyema of the accessory sinuses. In addition to a scotoma, which points toward a retrobulbar neuritis, we may also find sometimes an enlargement of the blind spot. The enlarged blind spot is produced by toxic or circulatory changes.

J. G.

Enlargement of the Blind Spot an Early Symptom of Posterior Accessory Sinus Disease—Van der Hoeve. (Wien. Med. Woch., March 30, 1912.) Enlargement of the blind spot as an early symptom of disease of the optic nerve produced by an affection of the accessory sinus is of importance, because such an affection may be the precursor of cerebral complications. Enlargement of the blind spot is found in cases of acute retrobulbar neuritis of other origin, as well as in cases of sympathetic opthhalmia. The author believes that the anatomical cause of the enlargement of the blind spot is brought about by an affection of a small nerve fascicle which lies in the outer periphery of the optic nerve. This fascicle is the first one to be involved in cases of posterior accessory sinus disease.

Sinuses. 299

ENLARGEMENT OF THE BLIND SPOT (VAN DER HOEVE'S SYMPTOM) AND CENTRAL SCOTOMA IN DISEASES OF THE POSTERIOR NASAL SINUSES.—RÜBEL, EUGEN. (From the eye clinic of Prof. Th. Axenfeld in the University of Freiburg. Klin. Mon. f. Aug., 50, II, August, 1912, p. 136.) At the clinic of Axenfeld central scotomas in diseases of the posterior nasal sinuses have been observed before Van der Hoeve's article appeared. R. reports the clinical histories of four cases: In the first case, a bilateral empyema of the ethmoidal cells, an extensive enlargement of the blind spot in both eye for red and green was observed, which disappeared in a week after opening the left posterior ethmoidal cells. This showed that the left posterior ethmoidal cells were in contact, not only with the left, but also with the right optic canal (an anatomical variety, described by Onodi).

The second case presented a later stage: relatively larger central scotomas for red and green around the blind spot, which was enlarged for white, and minute paracentral absolute scotomas for red and green, close to the point of fixation, with paresis of accommodation, in left eye. All these symptoms almost subsided ten days after removal of the hypertrophic middle turbinated body. As demonstrated by other observers, the affection of the mucous membrane of the sinuses may be very slight and still able to cause these symptoms.

In the third case a typical Van der Hoeve's symptom (without central scotoma), was found in the right eye after exacerbation of a chronic nasal catarrh on the right side, which made a participation of the ethmoidal cells very likely. After these were opened all paracentral scotomas disappeared within two weeks.

The fourth case was still further advanced; large absolute central scotomas, extending beyond the blind spot, which was enlarged for white. The symptoms disappeared two weeks after the operation of the empyema of the ethmoidal cells on both sides. This case showed that even, if the papillo-macular bundle of the optic nerve is affected, considerable improvement is possible after the operative cure of the nasal disease. Those cases, of course, give the best prognosis in which the enlargement of the blind spot, without central scotoma, indicates the affection of the posterior sinuses. Van der Hoeve, however, never asserted that it was a constant symptom. The charts of the visual fields are reproduced.

SYMPATHETIC OPHTHALMITIS.

SYMPATHETIC AMBLYOPIA.—Weekers, Liege. (Trans. Belg. Oph. Soc., Apl. 28, 1912) believes that too often we designate under the name of sympathetic amblyopia, certain ocular affections which are characterized by rhythmical, periodical or permanent interference of the vision, contraction of the visual field, dazzling, photophobia, phosphenes, pain and paresis or spasm of the accommodation in patients whose other eye has been injured. He believes that these symptoms might be due to a neurosis with a predominance of ocular manifestations and which he proposes to classify as pseudo-sympathetic ocular neurosis.

He believes that these lesions are not under the direct and immediate dependency of the injured eye, but are due to neuropathic symptoms transposing a mental disorder provoked by the anguish of the patient and by the visual disturbances fatally intertwining the loss of an eye.

M. D., trans. by J. F. C.

ON THE ACTION OF FERMENTS ON THE EYE AND ITS RELATION TO SYMPATHETIC OPHTHALMIA, II.—GUILLERY, H., Coeln. (Arch. f. Aug., 72, p. 991). In a former paper, Arch. f. Aug., 68, which was reviewed in Ophthalmology, G. reported on his experiments with ferments, produced by bacteria. By injecting these into the vitreous of rabbits he created changes of the chorioid and ciliary body, characterized by formation of epitheloid cells from the endothelia of the vessels and the chromatophores of the stroma, multinuclear lumps of protoplasm, which had to be regarded as giant cells, and plasma cells. The process took the same course, as sympathizing ophthalmia, ending in conversion of the infiltrated parts into connective tissue. These experiments suggested the possibil. ity whether such a production of ferments might occur in an eve with chronic inflammation. G. therefore studied experimentally the effect of the introduction of ferments in the eye, repeated for weeks and months. Some of these experiments are reported in detail, showing that the reaction to repeated injections was always the same, viz., an insidious inflammation of the deeper structures of the eye with fibrinous exudations into the anterior chamber and opacities of the vitreous which gradually cleared up more or less. If these allowed of an ophthalmoscopic view, very frequently numerous yellowish white spots were noticed at the fundus.

By further experiments G. found that certain bacteria, e. g., staphylococcus pyogenes aureus, developed ferments in the vitreous of the horse and rabbit, and that the vitreous is a very favorable

soil for the formation of ferments. Filtrates of such fluids, when injected into the vitreous, produced the same changes in the eye as in the former experiments. Of especial interest was, that after repeated injections of these solutions solutions into one eye, an affection of its fellow developed, which G. considers as a sympathetic affection, not as typical sympathetic ophthalmia, as he especially emphasizes.

Although this could not be attributed to the culture fluids, G. tested also the influence of culture fluids and found that they are by no means irrelevant for the eye, e. g., a mixture of three parts of bouillon and one part of gelatine. An injection of this into the vitreous leaves the uveal tract almost entirely unaltered, so that it can not be the cause of the intense infiltrations of the uvea, which G. attained with his ferment solution. However, it produces accumulation of round cells and exudations of fibrin in the vitreous.

In another series of experiments G. studied the question, whether from the blood merely toxic symptoms may be created in the eve which show any relations to sympathetic ophthalmia. After an inflammation of the eve was established by injection of a ferment solution, 1 ccm. of the same solution was injected into a vein. In many of these cases the recent foci, caused by the anaphylactic process from the intravenous injection, could be clearly distinguished from the older inflammations, due to the intraocular injection, and also an affection of the second eye with marked anatomical changes was observed. In order to decide whether the affection of the second eve after intravenous injection was dependent upon the disease of the first eye, G. made intravenous injections of ferment solutions into rabbits with perfectly normal eves. An hour after the first intravenous injection a slight pericorneal injection was observed, and after repeated injections an intense dilation of the retinal vessels, but at first no anatomical changes. In later experiments, however, the uvea showed considerable proliferations and extensive infiltrations with round cells and epitheloid cells. G. emphasizes that so far this was never attained, viz., to create such a state of irritation of the eyes by introducing into circulation toxic solutions free from bacteria.

Finally G. reports his experiments of implantation of pieces of the diseased uvea of eyes which had been injected with ferment solutions, into the anterior chamber and vitreous of other animals. The result was inflammation of the inoculated eyes of the same character as the changes in the eyes from which the pieces were taken. Summarizing G. considers it proven by his experiments: (1) that there are poisons which, introduced into the eye of the rabbit, produce an uveitis very similar to the sympathizing, and (2) that it is possible to create from the blood merely toxically an irritation of the eye, not only on the principle of anaphylaxis in a diseased organ, but also in the healthy. He believes that thus a new basis for the experimental investigation of sympathetic ophthalmia has been found. A close study of the interesting essay is urgently recommended.

C. Z.

SYMPATHETIC OPHTHALMIA.—DEUTSCHMANN, F., Hamburg, Germany. (Ann. Ophth., July, 1912.) The results of his experiments and investigations on the pathogenesis of sympathetic ophthalmia may be summed up as follows:

- 1. He has succeeded by inoculation with particles taken from the choroid of a human eye diseased with sympathetic ophthalmia, in producing genuine sympathetic ophthalmia in monkeys and rabbits.
- 2. He asserts that the exciting cause of sympathetic opthalmia is a Gram-positive diplococcus; perhaps a modified sarcina.
- 3. The second eye becomes diseased when the bacteria succeed in passing from the first eye into the lymph channels of the first optic nerve, past the optic chiasma, through the lymph spaces of the second nerve into the orbit.
- 4. The course of the bacteria passing from the eye into the optic lymph spaces, and vice versa, is a twofold one; either direct from the chorioid into the intervaginal space, or along the anterior ciliary vessels from the eyeball, around it, within the musculature of the orbit, and eventually back of the eye along the ventral vessels into the spaces of the optic nerve, and vice versa.
- 5. The chronic inflammatory changes in the meninges consist of circumscribed foci and cause no general symptoms. M. B.

TOXICOLOGY.

Amblyopia From Inhalation of Methyl Alcohol.—Tyson, H. H., New York (*Arch. Ophth.*, Sept., 1912, XLI, 459), reports three cases of amblyopia from inhalation of methyl alcohol that have come under his observation.

Case No. 1 was a laborer who had worked for two days shellacing the interior of a beer vat. The following day he showed symptoms of methyl alcohol poisoning. Examination showed vision, right 1-200; left 2-200. Double optic neuritis was present. Eight days later, vision not changed and he had absolute central scotomata extending 30° from fixation point; colors not recognized and his field for white was contracted about 10°. Final examination, five months later, showed vision 20-30 in each eye with contraction of fields for white; scotoma present; color fields for red and green contracted to 5° from fixation point.

In connection with case 1, the author adds that two fellow workmen, employed in the same work, died suddenly within fortyeight hours after stopping work, and at the same brewery, during the last year, five laborers died with symptoms of methyl alcohol poisoning.

Cases 2 and 3 were young women employed at polishing lead pencils, using varnish made from wood alcohol. Both presented eye lesions, due to chronic methyl alcohol poisoning, with defective vision.

In conclusion the author emphasizes the following points:

"1. That methyl alcohol is a subtle poison and should be recognized as such by law.

"2. That it may be inhaled in sufficient quantities during the hours of labor to produce amblyopia, blindness, or death.

"3. That where methyl alcohol is used in the trades and arts, notices of its toxicity should be posted about the premises and an abundance of ventilation should be obligatory. Failure to comply with this law should entail criminal liability. While ventilation will not entirely prevent its poisonous effects, it will greatly minimize it. Whenever sudden dimness of vision or blindness follows gastro-enteric attacks, with headache, vertigo, chills, sweating, etc., methyl alcohol poisoning should be suspected."

W. R. M.

HISTOLOGICAL FINDINGS IN THE EYE AND IN THE CENTRAL NER-VOUS SYSTEM IN FATAL CASES OF ACUTE METHYL ALCOHOL IN-TOXICATION.—Pick, Ludwig, and Bielschowsky, Max, Berlin. (Wien. Klin. Rundschau, May 26, 1912.) In two out of three fatal methyl alcohol cases of intoxication with total amaurosis there was found macroscopically a marked arterial hyperaemia of the interior of the eye, and microscopically an acute degeneration of the nerve fibres of the optic nerve. The changes in the ganglia were even more marked, then in the optic nerve.

Birch Hirshfeld produced the same pathological changes in animals. This is also in accord with the findings of Wood and Buller.

TRACHOMA.

TRACHOMA TREATED BY JEQUIRITY .- HAWLEY, CLARK W., Chicago. (Journ. Ophth. & Oto-Laryn., Feb., 1912.) In the author's first case the result has been most brilliant. In the second and third cases the results have been very good. Hawley reviews the first case in detail. Both lids were affected with very extensive pannus in both eyes. A corneal ulcer in either eye was also present. Copper preparations were used to no avail. The author's method is as follows: Atropin instilled in the left eye for 24 hours before the instillation of the jequirity. Treat the eve about 5 o'clock in the evening, so that by morning some results are observable. If no inflammatory condition has been brought about by the application of the jequirity, it is repeated at once the next morning. A very violent inflammatory condition is set up, the lids become enormously swollen and the discharge very profuse. Very great care in washing the eye thoroughly every hour, and at first applications of cold for about 24 hours, then applications of hot water continued every two hours, for about twenty minutes at a time, until the swelling and inflammatory condition has subsided.

G. I. H.

A RECENT CASE OF TRACHOMATOUS PANNUS CURED BY INOCULATION OF BLENNORRHOIC SECRETION.—GOLDZIEHER, W., Budapest (Cent. f. prakt. Aug., 36, May, 1912, p. 133). A girl, aged 9, suffering for years from the severest form of granular, mushy, trachoma with considerable thickening of the conjunctiva and very dense pannus, so that the iris could scarcely be seen, was treated for 3 months without the slightest improvement. Then the right eye was inoculated with blennorrhoic secretion, which however infected also the left eye. The corneae cleared up wonderfully and the conjunctivae became almost normal. G. emphasizes that blennorrhoic inoculation is permissible only in cases of intense pannus, and then only as a last resort.

C. Z.

THE MODERN SURGICAL TREATMENT OF ADVANCED TRACHOMA.—WILLIAMS, JAMES HALLIDAY, Cincinnati, Ohio (American Journal of Surgery, Sept., 1912). The writer says the advent of tissue resection for the eradication of trachoma was introduced by Richet, a French surgeon, in 1874. He reviews the opinions of different ophthalmic surgeons on this method of treatment. It is advised in those cases in which medicinal and mechanical treatments have

Tumors.

305

been persistently applied and have failed to stop the increasing conjunctival hypertrophy; also in those cases in adult life in which the tarsal cartilage and overlying conjunctiva are thickened and infiltrated and the retro-tarsal fold is boggy, velvety and studded with granulations and marked hypertrophy exists. The author describes minutely the technic of the operation using illustrations. He believes that, in the vast majority of instances, only the radical treatment of trachoma by excision, means conservation of the vision.

M. D. S.

TUMORS.

METASTATIC CARCINOMA OF THE EYE.—GALLEMAERTS, Brussels (Trans. Belg. Oph. Soc., April 28, 1912), presented a woman who had been operated on for cancer of the breast ten years ago, with two recurrences. Six months ago the eye showed metastasis to the uvea.

M. D., trans. by J. F. C.

Tumor of the Pons-cerebellar Angle.—Danis, Brussels (Trans. Belg. Oph. Soc., April 28, 1912), gave a detailed observation of a case of tumor of the pons-cerebellar angle. The headache and choked discs disappeared after decompression, but this was followed by double optic atrophy. The tumor was removed at the autopsy and proved to be a fuso-cellular glioma.

M. D., trans. by J. F. C.

SIMPLE HEMANGIOMA OF THE IRIS AT THE PUPILLARY MARGIN.—HOENIG, A., Budapest (Cent. f. prakt. Aug., 36, August, 1912, p. 229), accidentally discovered a small tumor of the iris, which had the aspect of as a rust-colored naevus, in a man, aged 47, who came on account of presbyopia. Under the corneal microscope of Zeiss-Crapsky the tumor consisted of 3 parts, partly overlapping the pupillary margin, which looked like currants. H. diagnosed hemangioma, caused by an enormous dilatation of the capillary arteries of the stroma of the iris. During the 2 months of observation the tumor seemed to grow slowly.

C. Z.

SMALL ROUND-CELL MYO-SARCOMA OF ORBIT WITH EXTENSION INTO EYEBALL.—POSEY, W. C., Philadelphia (Ophth. Record, February, 1912). Patient, female, age 15, with history of proptosis of right eye since one year old. History negative. Ophthalmoscopic examination showed clear media, and the signs of stasis in the papillomaculary region. There was very marked haze and

swelling of the retina in the macula, tortuosity of the retinal vessels and marked dilatation of the veins. There were no hemorrhages. The periphery of the fundus was uninvolved. The left eye was unaffected. Right vision equalled 3/60, left vision 5/5. The right field was concentrically contracted, but no scotomata could be outlined. The globe was enucleated and the greater part of the contents of the orbit eviscerated. No recurrence in twenty-one months.

G. I. H.

Another Case of Chloroma.—Bedell, A. J., Albany (Ann. Ophth., July, 1912). Two cases are reported. One in a boy aged eight, and the other in a girl aged eighteen. In the latter case a full laboratory report is made of all the organs of the body. Pathologically, the disease is characterized by growths, most frequently multiple, in connection with the bones of the face, orbit and other regions. Macroscopically the growths vary in color from a dark olive to a very light pea green which fades rapidly on exposure to air or the various fixation fluids. The color is probably due to a lipochrome which is found in extremely variable amount even in the cells of the primary growth. Tissues invaded by the tumor undergo different forms of degeneration with resulting acute and chronic inflammatory reaction of slight to moderate degree. The nature and source of the pigment is not evident. The ocular manifestations are many and varied. The eye balls become proptosed and the vision lowered, the eye lids show great dilatation of the blood vessels, the conjunctiva chemotic, paralysis of ocular muscles, optic neuritis and lagophthalmos are all present in varying degrees. The orbits become filled with nodular growths.

The blood count showed in his first case 1,410,000 reds and 79,000 whites, and in his second case 2,200,000 reds and 52,000 whites. The disease runs a rapid course resulting in death in from one to two months' time.

W. R. M.

A Case of Chloroma.—Sattler, Robt., Cincinnati (*Arch. Ophth.*, Sept., 1912, XLI, 452), reports a case of chloroma in a boy aged 11 years. Among the earliest signs were prominence of

both eyes and symmetric tumor masses in both lids and orbits, due to displaced and enlarged lacrymal glands. This was followed by a rapid subperiosteal growth filling apex and walls of both orbits. Autopsy showed extensive involvement of the cranial cavity and other organs of the body.

A clinical history of the case with autopsy findings, is given, and a bibliography is added. W. R. M.

THE EARLY SYMPTOMS AND THE OCULAR FINDINGS IN A CASE OF CEREBRAL TUMOR.—WILKINSON, OSCAR, Washington (Ann. Ophth., July, 1912). The author makes a frank confession in his report of a neurological case of the insufficiency of the ophthalmologist from a neurological standpoint. He was consulted by a young woman in March, 1906, who complained of headache. He gave her correcting lenses. She was relieved until February, 1907. She then complained of headache and tennitus. He changed her glasses and treated her ears. He did not see her again until November, 1911. She was again complaining of headache. changed her glasses, with no relief. A week later he gave her 14 grs. calomel and a tonic. No improvement. Ten days later she was seeing double, was vomiting, vision had dropped to 6/9 and the ophthalmoscope showed a well marked papillitis in right eye. He now put her upon mercury and the iodides. A week later she was unimproved except the nausea and vomiting had stopped. Papillitis had developed in left eye and the right disc had become choked. Two days later he gave her 1/12 gr. heroin because she was in such distress. Four days later he found her much worse, she was unable to retain her urine. He then called Dr. Roy in to take charge of the medical treatment. At this time her visual fields were taken for the first time, and color fields were found contracted to the 5° point. Three days later Dr. Newell was asked to see the case. It was at this time that Dr. Williams, a neurologist, was called in consultation. She was taken to a hospital, and remained there two weeks. No new symptoms developed, except failure of strength and mind. She was then taken home. Then taken back to hospital again for a decompression operation which was performed by Dr. Carr, but she died twelve hours later.

A postmortem examination of the brain showed a tumor situated in the left lateral ventricle.

M. B.

Two Cases of Epibulbar Sarcoma.—Koller, Carl, New York (Arch. Ophah., July, 1912, XLI, 327), reports two cases of epibulbar sarcoma, operated by him eight and six years ago. There has been no recurrence in either case. The author does not believe it is justifiable to enucleate or eviscerate in the early stages of the growth and believes it is more rational to follow the advice of Fuchs, who practices radical excision of the tumor mass, followed by cauterization of the basal tissues, and resorts to enucleation only in case the tumor is so large that the greater part of the conjunctiva would have to be excised with it. Koller emphasizes the necessity of thoroughly cauterizing the underlying tissues after removal of the growth.

W. R. M.

VITREOUS

Muscae Volitantes.—Schmidt-Rimpler (Wien. Med. Woch., June, 1, 1912). If the ophthalmoscopic examination shows no opacities of the vitreus, the complaint of muscae volitantes, is as a rule not considered to be abnormal, but this, according to the author, is erroneous, because the pathological opacities of the vitreus may be so small that they could not be detected with the ophthalmoscope.

Opacities are to be considered pathological when: 1. the form is different than ordinary muscae volitantes; 2. when the color is black; 3. when there are single large opacities; and 4. when they appear suddenly.

J. G.

WASHING OF THE VITREOUS IN CASES OF INCURABLE BLEEDING IN THE VITREUS.—KOMOTO (Tokio), (Wien. Med. Woch., March 30, 1912). In two patients who became blind on account of recurrent bleeding in the vitreous, vision was improved by washing the vitreous with 0.6% of a sodium chloride solution after the sclera had been incised.

In cases where no improvement was seen in the beginning, it occurred after the blood had been absorbed. In no case were any bad effects to be noticed.

J. G.

VISION

VISUAL MEMORY.—BRAY, AARON, Philadelphia, Pa. (American Medicine, June, 1912). After defining, stating function and discussing further, visual memory, the writer considers the relation of the motor apparatus to it. He asks, "Do the internal and external ocular muscles perform any physiologic function in the psychic process of mental imagery?" He says in physical or objective vision the stimulus comes from without, in the process of visual memory reflexly from within, stimulating the optic nerve and tract as in ordinary vision. He believes that likewise in order to produce a clear image from visual memory the muscles of accommodation and convergence are also stimulated. He cites as proof of this the experiment of closing the eyes and forming a mental picture of a large object in the distance, then changing to a mental picture of a small object close at hand, noting a similar sensation of muscular contraction to that which can be felt when actually looking at similar objects with the eyes open. He also refers to diminution in the power to recognize objects or recall them mentally when the cortical visual memory centre or the path leading up to this centre is disturbed.

M. D. S.

The Wonders of Light.—Ogden, J. Gordon (Popular Mechanics, July, 1912). The writer traces the development of vision from the "eye spot" in Euglena to that of the human eye, discussing briefly compound vision. He describes the general structure of the retina and mentions various theories concerning what takes place when the ether waves enter the rods and cones, putting special stress on the photo-chemical theory as being the most probable. He calls attention to the presence of the visual purple to a marked degree in nocturnal animals and gives an illustration showing its function. He points out and explains defects in the human eye, as chromatic aberration and various refractive errors. M. D. S.

IMPAIRMENT OF VISION AFTER SEVERE HEMORRHAGE.—HEGNER (Wien. Med. Woch., June 1, 1912). The author has seen three cases of severe hemorrhage of the stomach which were followed by great impairment of vision. Two of the patients became totally blind. The third patient became blind in the left eyes, and there was a great scotoma in the right eye. The ophthalmoscope showed an atrophy following a neuritis optica. This undoubtedly was brought about by an ischaemia of the optic nerve and of the retina. The atrophy is to be considered a degeneration due to anaemia.

J. G.

VISUAL FIELD.

The Forms of the Visual Field in Table Atrophy of the Optic Nerve.—Langenbeck, K. (From the eye clinic of Prof. W. Uhthoff in the University of Breslau. Klin. Mon. f. Aug. 50, II, August, 1912, p. 148), reports on the visual fields of 130 cases of table atrophy of the optic nerve, which have not been included in the material utilized by Uhthoff in his treatise in the handbook of Graefe-Saemisch. The defects of the visual field for white generally commence at the periphery, rarely at the center: in 81 eyes of the present statistics from all sides, in 37 from the nasal, in 33 from the temporal side, in 25 from above, in 7 from below, in 18 from the center. A definite rule could not be established. In many cases, however, the defect in both eyes showed a certain symmetry, e. g. from the temporal or nasal side, left or right.

L. concludes: A form of the visual field, absolutely typical for tabes, does not exist. Peripheral defect, contraction for colors and

early loss of the sensation of red and green in the whole visual field are most frequent; a partial defect with well preserved function of the remaining visual field is less frequent. The rather rare cases of central defect require repeated examinations with regard to retrobulbar complications. Hemianopic visual fields do not occur in uncomplicated tabic atrophy of the optic nerve.

C. Z.

CONTRIBUTION TO THE ETIOLOGY OF BITEMPORAL HEMIANOPSIA WITH ESPECIAL CONSIDERATION OF THE DISEASES OF THE HYPO-PHYSIS.—BOGATSCH, G. (From the eye clinic of Prof. W. Uhthoff in the University of Breslau. Klin. Mon. f. Aug., 50 II, September, 1912, p. 313). shows on 34 cases of Uhthoff, arranged in tabular form, and 315 cases from literature the importance of affections of the hypophysis in the diagnosis of temporal hemianopsia, and how recent statistics have changed in its favor, since in 1886 Pierre Marie directed attention to the relation between acromegaly and diseases of the hypophysis. In 19 out of the 34 cases the affection was ascertained or made very probable through operations, autopsy, or Roentgen rays. In 128 out of the 315 cases from literature, i. e. 40%, the hypophysis was diseased. The triad: temporal hemianopsia, habitus of the patient, and Roentgen skiagraph, make the diagnosis almost certain. One of these points arouses the suspicion of disease of the hypophysis, temporal hemianopsia and one of the other points render the diagnosis very probable.

C. Z.

ON A CASE OF BILATERAL HOMONYMOUS HEMIANOPSIA, WITH ALEXIA AND AGRAPHIA, AFTER LABOR.—ENDELMAN, LEON, Warschau (Arch. f. Aug. 71, p. 177). A woman, aged 32, without constitutional affections, suddenly became blind after being delivered of triplets. Gradually some improvement took place, leaving complete right-sided, and incomplete left-sided, homonymous hemianopsia, with wrong projection and faulty conception of the size of objects, amnesic aphasia, alexia and agraphia, and visual hallucinations. The preserved visual field had the shape of small central islets. The ophthalmoscopic condition and pupillary reaction being normal and other symptoms wanting, there were in the opinion of E. only two possibilities with regard to the etiology, viz. thrombosis of the cerebral arteries or encephalitis from autointoxication during the puerperal state. The marked psychical symptoms seemed to favor the second surmise. The affection was, according to the symptoms, localized in the parieto-occipital lobe and the left angular gyrns, the center for letters. The alexia alone could be attributed to a lesion of the white subcortical substance, but the simultaneous agraphia indicated that also the cortex was affected and that it was a cortical alexia. In similar cases of Bauer, Chevallereau, and Meyer, the labor was of greatest importance for the origin of the disease, but the immediate causes of the cerebral affection varied, viz. nephritis, acute anemia of some portions of the brain after profuse hemorrhages, and the assumption of an embolic process in the brain. The faulty appreciation of the size of objects and the wrong projection were explained by disturbance of the constant relation between centripetal excitation and cortical perception of motion by the hemianopsia.

C. Z.

Book Reviews

Contribution to the Estimation and Treatment of Comcomitant Strabismus.—Caesar, Gustav, Marburg. (Sammlung zwangloser Abhandlungen aus dem Gebiete der Augenheilkunde by A. Vossius.) 43 pp.. 1.50 Mark, \$0.38.

Caesar utilized 147 cases of convergent strabismus and 17 cases of divergent squint, observed during the last two years at the eye clinic of Prof. L. Bach in the University of Marburg, for statistical researches with regard to their refraction, heredity, and defective fusion. For better comparative illustration of these various points the cases are arranged in tabular form. Then the author discusses on the results of treatment, by correcting the errors of refraction, fusion exercises, and operations. The essay will be read with great interest.

C. ZIMMERMAN.

A Further Contribution to the Glaucoma Question.—Wagner, W., Odessa, Berlin. Berlin 1912 S. Karger, Karlstrasse 15. 45 pp. 1.50 Mark, \$0.38.

The author reports in detail his personal clinical history of glaucoma of his left eye. He had the first attack in 1877 at the age of 41. In 1878 iridectomy was performed with complete success. For 25 years the eye remained perfectly well, until a central scotoma developed terminating within four months in total blindness. As there were no other glaucomatous symptoms, W. ascribes this to retrobulbar neuritis. Also the first palpable rise of tension, 31 years after the operation, is attributed to an incipient opacity of the lens with swelling.

In connection with his case the author gives his views, gained in a practice of over 50 years, on glaucoma in general and its treatment. As surgeon of the eye Hospital at Odessa within the last few years he had ample material to study the glaucoma question and to find corroborated what he published 10 years ago. He contends that the essential cause of glaucoma lies within the bulbar capsule and that it can be cured only by operations on the globe itself. He decidedly opposes the medicinal treatment of glaucoma and considers iridectomy, very carefully performed, as the proper operation, all others being auxiliary.

C. Zimmerman.

Tasks of Glaucoma Treatment Controlled by the Tonometer of Schioetz. von Hippel, Eugen, Halle a. s. (Sammlung Zwangloser Abhandlungen aus dem Gebiete der Augenheilkunde by Vossius. Vol VIII, No. 7.) Halle a. s. Carl Marhold, 1.20 Mark, \$0.30.

Reports on the cases of glaucoma treated at the clinic by the au-

thor and his predecessor, Schmidt-Rimpler, which as far as possible he examined personally, for determining the final results. v. H. considers the second, apparently still healthy, eves of patients, whose first eyes were undoubtedly glaucomatous, as the most valuable material for further researches with regard to the commencement of the disease. He shows by several instances how careful tonometric examinations demonstrated that the pathologically increased tension existed longer than usually supposed. v. H. is in favor of operating during the so-called prodromal stages of glaucoma and to control for years the results. Miotics are only indicated if the operation on the first eye was detrimental or if opposed by the patient or if contraindicated on account of the general condition. v. H. considers it as the most important task to ascertain the earliest possible stages, i. e. such cases in which the diagnosis can only be made with the tonometer. Therefore he recommends tonometric control of the second eye at regular intervals, even if there are no subjective symptoms of threatening glaucoma in this eye. The interesting essay which discusses in detail many points of practical importance is highly recommended.

C. ZIMMERMAN.

Atlas to the Embryology of the Human Eye. Bach, L., Marburg, and Seefelder, R., Leipzig. No. 2. 73 pp. With 30 figures in the text and 19 lithographic plates. Leipzig. Wilhelm Englemann. 1912. 36 M. \$9.

In our review of the first No., in Ophthalmology, Vol. VIII, No. 3, April, 1912, the unique features of this monumental work were set forth. Its presentation of an uninterrupted series of all phases of the development of the human eyeball from the earliest stages has never been attempted before. Ten plates of the 2nd No. and the text to sutures of the lens, vitreous and zonula, are the work of the late L. Bach, the chapters on the development of the cornea, iris, ciliary body, sphincter and dilator muscles and sinus of anterior chamber, are by R. Seefelder. The plates, like those of the first number, are magnificent and with the concise text give a splendid exposition of this interesting branch of science.

C. ZIMMERMAN.

Brief Guide to the Anomalies of Refraction and Accommodation. An easily comprehensible instruction for prescribing glasses. For practicing physicans and students. Schiess, H., Professor of Ophthalmology in the University of Basel. 2nd, enlarged, edition. 71 pp.

Wiesbaden. J. F. Bergmann. 1912. with 30 illustrations. Cloth. 2.80 Mark, \$0.70.

This little work amply fulfills what it promises, viz. to convey an easily comprehensible understanding of the errors of refraction and accommodation and their correction to the general practitioner and student. As the mere facts have not changed since its first appearance, the author has not seen fit to make any alterations, although his views on some points differ from those held today, e. g. on full correction of myopia. Under the chapter on accommodation the valuable investigations of C. Hess, which confirmed the theory of Helmholtz, might have been mentioned. The external appearance is very handsome, paper and print excellent. A new chapter on protective glasses by Prof. C. Mellinger has been added.

C. ZIMMERMAN.

Handbook of General Pathology.-Krehl, L., Prof., Heidelberg, and Marchand, F., Prof., Leipzig. "Handbuch der allgemeinen Pathologie." In conjunction with Aschoff, L., Freiburg in Br.; Askanazy, M., Genf; von Baumgarten, P., Tübingen; Beneke, R., Halle; Boehn, R., Leipzig; Ernst, P., Heidelberg; Fischler, F., Heidelberg; Fraenkel, C., Halle; Henke, F., Konigsberg i. Pr.; Hering, E., Prag; von Hess, C., Würzburg; Hirsch, K., Gottingen; Hoche, A., Freiburg i. Br.; Klemensiewicz, R., Graz; Kraus, F., Berlin; Kretz, R., Würzburg; Lüthje, H., Kiel; Minkowski, O., Breslau; Moritz, F., Koln; Paltauf, R., Wien; von Romberg, E., Tübingen; Schmidt, M. B., Marburg; Schwenkenbecher, A., Frankfurt a. M.; Sobernhein, G., Berlin. Volume II, Part 1. General pathology of circulation, lymphcurrent and respiration. 658 pp. with 9 figures. Leipzig. S. Hirzel. 1912. 21 Mark, \$5.25.

The general scope and the great value of this important work, in which a comprehensive presentation of the doctrine of the pathological processes, including their causes, is intended, was set forth in our review of the first volume in Ophthalmology, Vol. V, 2. January 1909, p. 369. The second volume contains the first part of the section on circulation, viz. chapter 1 on the pathology of the blood, by R. Paltauf, E. Freund and C. Sternberg, and chapter 2 on the disturbances of the distribution of the blood, by F. Marchand. The first chapter is subdivided into: quantitative changes, chemism, coagulation, osmotic pressure of the blood; pathology of the red blood corpuscles; form and structure, morphological and chemical changes, resistance, regeneration, number, increase, decrease, amount of hemoglobin in the blood, hemolysis hemagglutination, viscosity of the blood; pathology of the white blood corpuscles; morphology and biology, origin, number, leucocptosis, leukemia; pathology of the blood-forming organs, blood plates and hemoconia. Marchand discusses in the 2nd chapter the disturbances of the distribution

of the blood, which consist in a diminished or increased flushing, diminution of the quantity of the blood, anemia, or augmentation, hyperemia, and in hemorrhages. He speaks here of the contractility, innervation, and physical properties of the blood vessels, local anemia from increased outflow of the blood, diminished arterial afflux, or compression; active hyperemia, viz. the neuroparalytic, irritative, and other forms, and passive venous hyperemia, passive congestion. The hemorrhages are considered under traumatic and spontaneous hemorrhages, including hemorrhagic diathesis, congenital and acquired; the idiopathic and symptomatic purpura in intoxications, diseases of the blood and infections.

The pathology of the lymph current is presented by R. Klemensiewicz in chapter 3 under the subdivisions: lymph paths, interstices of the tissue, relation between tissue and lymphatics, tissue fluid, formation of lymph and the transudates, capillary walls and function of membranes, vasomotor regulation of the lymph current in the range of the capillaries, the propelling force of the lymph current, edema, hydrops, composition of transudates and their absorption.

Chapter 4, on the pathology of respiration, has been allotted to O. Minkowski and A. Bittorf. Minkowski takes up the regulation and insufficiency of respiration and the means of their compensation, the supply of air and blood to the lungs, exchanges of gases in the lungs and tissues, finally the special protective arrangements of the respiratory organs: secretion of mucus, ciliated epithelium, reflex closure of the glottis, coughing and sneezing.

In the 2nd part the various causes of insufficiency of respiration and its results are considered by A. Bittorf under change of respired air, admixture of abnormal gases, diseases of the respiratory, abdominal, circulatory, organs and blood, general diseases, disturbances of metabolism and intoxications, diseases of the nervous respiratory apparatus.

The chapters are generally preceded by a brief physiological introduction. A bibliography is appended to each chapter, and carefully prepared indexes of subjects and names and a special table of contents to each volume, greatly facilitate orientation. The discourse is very clear and interesting, giving a splendid and exhaustive modern exposition of the pathological processes.

C. ZIMMERMAN.

Description of An Ophhtalmoscope for Examining the Retina in the Living Eye.—H. von Helmoltz. Introduced by Hubert Sattler, Leipzig. Klassiker der Medicin, edited by Karl Sudhoff. 36 pp. with 3 figures in the text. Leipzig. Johann Ambroisius Barth. 1910. Cloth 1.20 Mark, \$0.30.

Every ophthalmologist will be eager to possess this reprint of the classical essay, in which Helmholtz in 1851 described his wonderful instrument. With admirable clearness and precision Helmholtz propounds here the conditions under which the background of the eye becomes visible and distinct images of the details are perceived. Within the 60 years since the appearance of the work, nothing essential has been added to what Helmholtz wrote at that time. The publisher certainly deserves our gratitude that he made this famous little book again accessible.

C. ZIMMERMAN.

Ophthalmoscopic Diagnostics With Typical Pictures of the Background. With especial consideration of cases important for general medicine. For physicians and students. Adam, C., assistant at the Royal Eyeclinic in the University of Berlin. With 86 colored illustrations on 48 plates and 18 text figures. Urban & Schwarzenburg, Berlin and Wien. 1912. 21 Mark, \$5.25.

This magnificent work differs from other ophthalmoscopic treatises, in that it does not start from the clinical classification of the disease, but from the ophthalmoscopic symptom, e. g. hemorrhages, white or black foci, etc. From these symptoms the diagnosis and the clinical conception of the disease are built up. The relation of ocular affections to general diseases received special consideration, also the anatomo-pathological changes as far as necessary for the understanding of the ophthalmoscopic pictures. These were drawn under observation with the demonstration ophthalmoscope of Thorner and represent the inverted image at 10 diameters. The text gives a very good expose of the technic of the ophthalmoscopic examinations, describes the normal fundus with an anatomical survey, then conus, staphyloma, atrophy of the optic nerve in its va. rious forms, neuritis, papillitis, the vessels of the retina, retina and chorioid. Many questions, especially with regard to etiology of the ophthalmoscopic changes and the differential diagnosis, frequently arranged in antitheses, are offered and very exhaustively answered. The plates are excellently executed, true to nature, and the fine paper and the large type give the work a splendid external appearance. It deserves the highest recommendation.

C. ZIMMERMAN.

The Energetic Imperative.—Ostwald, Wilhelm. First Series. 544 pp. Leipzig. 1912. Akademische Vorlagsgesellschaft m. b. H. 9.60 Mark, \$2.40.

Ostwald created the term energetic imperative in analogy to the "kategoric imperative" of Immanuel Kant. It differs from it, how-

ever, in that it does not mean a command, but simply a guide to help us attain by the best and fastest route what we intend and wish. It says: utilize, but do not waste energy. This brief sentence is, as the author sets forth, indeed the most general rule of all human actions and extends not only to technical or practical works, but to all activities of man, up to the highest and most valuable achievements. It is the most effectual and enduring bridge between the apparently separated domains of matter and mind. From the physiological proof, that no sensory apparatus can become active if it does not receive or empty energy, follows that our whole knowledge of the outer world depends upon the knowledge of physical and temporal arrangements of the energies of our sensory organs. Thus the conception of matter may be reduced to that of energy. On the other hand the psychical phenomena can be shown to be immediate manifestations of the energies existing in the organisms, e. g. in mental work the consumption of chemical energy of the food is transformed into psychical energy. Ostwald considers his philosophical task of life, to apply the laws of energy to all realms of pure and applied sciences, well founded by the historical development and the present state of all sciences. In this spirit the numerous essays of this series are presented in a wonderful variety, dealing with philosophy, organization and internationalism, pacifism, pedagogics and biography. Many of the topics here discussed are of great interest to the physician, to whom the fascinating book is warmly recommended for leisure hours.

C. ZIMMERMAN.

The History of Ophthalmology, Especially That of the Eye Clinic of Berne, Switzerland.—Siegrist, Prof. Dr. A.

"The history of the Ophthalmology, especially of the eye clinic in Bern is most intimately connected with the history of the Berner Inselspitales. This justifies us in beginning with the history of the hospital of Bern." In 1360 a hospital was founded with 13 beds. In the reformed ordination of 1584 we find mentioned a "Bruch-schneider" or "Staarwuerger."

The Festschrift entertaingly relates the entire history from the foundation of the Academy in 1805, which in 1834 became a University. Wilhelm Rau, the first ophthalmological professor, died in 1861, and was succeeded in 1862 by K. W. v. Zehender, who remained until 1866, accepting a call to Rostock. This hastened the foundation of a separate eye clinic, where Prof. H. Dor worked

from 1867 to 1876, changing his domicile to Lyon. He was succeeded by Prof. E. Pflueger, who died in 1893, being succeeded by his pupil, the present incumbent, who as scientific and unassuming personality treads honorably in the footsteps of his predecessors.

The portraits of these scientific ancestors illustrate with different photos of the successive clinics of the "Festschrift."

E. E. BLAAUW.

Die Neue Universitaets-Augenklinik in Bern.-Siegrist von, Prof. Dr. A.

In this second part of his "Festschrift" Prof. Siegrist describes the new Berner ophthalmological clinic, which is built from his plans and is at present an example for those who contemplate to build something similar. Every new practical device has been followed, as f. i. the vacuum cleaner. Fifty-eight illustrations embellish this guide.

E. E. BLAAUW.

Lesions of the Human Visual Organ Through Blunt Traumatisms of the Skull As Well As of the Bulb.—Birkhauser, Rudolf. 1909.

Only such ocular diseases are treated following a blunt trauma, where no external lesion of the bulb or its surrounding follow. The material used comes from the university clinic and from Prof. Siegrist's private clinic. A part of the beautiful illustrations is made by Prof. Siegrist. The book is divided in three parts:

- 1. Lesions of the ocular apparatus affecting exclusively the surrounding of the eye or the skull at some other place. These may produce dacry-blennorhoea, hemianopsia with ptosis, exophthalmus, lesions of the optici and chiasma, of the ocular muscles, of the nuclear region, enopthalmus traumaticus, emphysema of the lids.
- 2. Ocular lesions, which affect the eye directly without external wound and without opening the bulb. After treating the etiology the action of the contusion is studied. The conclusion reached is that the whitish opacity of the retina must be considered as oedema through paralysis of the vessels. Differences still exist as to the origin of the transudation, and the causes of the often relatively extensive disturbance of vision. Experimental investigations on eyes of monkeys are desired. Then are treated macular lesions, formation of a central hole, retinal remorrhages, detachment of the retina, lesions of the chorioid rupture, traumatic rupture of ciliary arteries, hemorrhages of the chorioid, traumatic cyclodyalisis, iridodyalisis, hyphaema, retroflexio iridis and rends, traumatic mydriasis and miosis, paralysis and spasm of the ciliary muscle; in-

juries of the lens, of the zonula, formation of an opaque ring and cataract; subconjunctical scleral ruptures.

3. Dyscrasic diseases of the eyes, which are provoked through slight contusion. Here is considered the question if a trauma can produce an ocular disease in which we know the patient to have a constitutional condition. He concludes, that it is not proven, that a contusion without external lesion can provoke a serious dyscrasic affection of the eye. But we should not be blinded of the possibility. The probability is augmented when we observe that a traumatism of the different parts of the body of a dyscrasic pattient can produce typical dyscrasic affections. He believes, that in numerous observations of tuberculous or luctic eye inflammations, the attention has been directed far too little to small exciting external incitations. The last part of the book contains all the "Gutachten" in a legal case, where after a small trauma a typical iritis serosa appeared.

The illustrations and entire make up of the book are exemplary. To be recommended is the way of pointing with clear red letters in the photographs.

E. E. Blaauw.

STATEMENT OF THE OWNERSHIP AND MANAGE-MENT

Of Ophthalmology, published quarterly at Seattle, Wash., required by the Act of August 24, 1912.

NOTE.—This statement is to be made in duplicate, both copies to be delivered by the publisher to the postmaster, who will send one copy to the Third Assistant Postmaster General (Division of Classification), Washington, D. C., and retain the other in the files of the postoffice.

Owners: (If a corporation, give names and addresses of stockholders holding 1 per cent or more of total amount of stock.)

Known bondholders, mortgagees, and other security holders, holding I per cent or more of total amount of bonds, mortgages, or other securities: None.

Average number of copies of each issue of this publication sold or distributed, through the mails or otherwise, to paid subscribers during the six months preceding the date of this statement. (This information is required from daily newspapers only.)

H. V. WÜRDEMANN, Editor.

Sworn to and subscribed before me this 4th day of October, 1912.

(Seal) S. W. FARQUHAR, Notary Public. (My commission expires Jan. 9, 1914.)

POSSIBLE REVOLUTION IN THE TREATMENT OF INFECTIOUS DISEASE.

Are existing methods of treating bacterial diseases to be fundamentally changed? Do the Phylacogens furnish the key to a new and enlightened therapy? Medical and other scientific men are beginning to ask these questions. Less than one year ago the name Phylacogen had not been injected into the language. Today you can scarcely pick up an American medical journal that does not contain some reference to the remarkable group of products for which it stands.

What are Phylacogens? Briefly, they are sterile aqueous solutions of metabolic substances generated by bacteria grown in artificial media. The name Phylacogen (from the Greek) means "phylaxin producer" — literally, guard" and "to produce."

The initial Phylacogens were originated by Dr. A. F. Schafer in 1908, the method of preparation and technique of application being first presented to the San Joaquin Medical Society in Fresno. California, in October, 1910, and later to the San Francisco Medical Society (January 14, 1911). Subsequently the preparation of the Phylacogens was entrusted to Parke, Davis & Co., the work of manufacture being carried on at the company's biological laboratories in Detroit, Michigan.

The principle upon which the use of the Phylacogens is founded is the theory of multiple infections. Three facts are set forth as the basis of the new therapy:

- 1. Practically all acute and many chronic diseases are caused by the metabolic products of bacteria.
- The human subject is the host of micro-organisms that are pathologically latent, but capable of setting up a disease process under certain conditions.

The SNUGFIT Is the BEST Eye Patch on the Market

It fits any eye or either eye.

- It perfectly excludes light and puts the eye at rest, relieving strain and tension.

 If a dressing is not needed it allows perfect freedom of movement of the eye-
- It retains a cotton or gauze dressing when needed.
- Pressure can be regulated by the amount
- of dressing. Moist antiseptic dressings can be used with the Oiled Silk lining without injury to the patch.
- It is easily adjusted and easily removed.
- It is easily adjusted and easily removed.

 It is much easier to remove for changing dressings, dropping medicine in the eye or for applyqing hot or cold applications than a bandage or gauze pad held on by adhesive.

 It has not rubber strings to deteriorate, but is always good.

 It is useful in all diseases or injuries of the eye or after surgical operations.

 It is very neat and genteel in appearance, which appeals to the patient.

 Patented March 23, 1909.

- Patented March 23, 1909.

The Snugfit Eye Patch Co., LANSING, MICH.

3. The growth of infecting microorganisms can be arrested and their effects neutralized by products derived from their development in artificial culture media.

Five Phylacogens are now available: Rheumatism Phylacogen, Ervsipelas Phylacogen, Gonorrhea Phylacogen. Pneumonia Phylacogen, and Mixed Infection Phylacogen (the last named being applicable to the multiplicity of infections which may be said to be of questionable etiology). They are supplied in rubber-stoppered glass bulbs of 10 Cc. capacity and are administered hypodermatically (subcutaneously or intravenously).

Many experienced physicians, representing both private and hospital practice, believe that in the Phylacogens we have the most efficient remedial agents vet devised for the treatment of acute and chronic infections.

In Preparation

Wurdemann, on "Eye Conditions in the Different Stages of Arterio-Sclerosis" (Bright's Disease). A book of about 400 royal quarto octavo pages, 24 plates in colors, many illustrations in the text. A digression from the stereotyped medical book. Italian bond paper, very thin, printing of large type, easy of reading, binding of limp leather.

One of these books given with four years' subscription to Ophthalmology, payable, of course, in advance.



Trade supplied through regular channels. If you can't get Dole's, write

Hawaiian Pineapple Products Co., Ltd.

112 Market Street

San Francisco, California

"Ophthalmology"

Essays, Abstracts and Reviews

The International Quarterly Eye Journal, owned, edited, and published by and for the profession. Each issue contains 200 pages of original matter and properly drawn up abstracts of recent Domestic and Foreign Ophthalmic Literature.

Subscription Price, - \$5.00 per annum in advance.

"The Ophthalmic Record"

A Monthly Journal of Ophthalmology.

Represented in the United States,

Canada and Europe.

Subscription Price, - \$4.00 per annum in advance.

"The Ophthalmoscope"

A Monthly Review (Illustrated) of Current Ophthalmology

Editor......Sydney Stephenson Sub-Editor......Ernest Thomson Editorial Secretary...T. Harrison Butler

Subscription (prepaid)—One Pound English or \$5.00 American

London. 24-26 Thayer Street, W.

"The Laryngoscope"

An International Monthly Journal devoted to Diseases of the Nose-Throat-Ear

Subscription Price, - \$3.00 per annum in advance.

There are no Club Rates allowed on any of these journals

OPHTHALMOLOGY

604-612 THE LEARY BLDG. SEATTLE, WN.

Special Price for Binding Yearly Volumes

Yearly volumes should go into your library bound in the most approved, substantial and artistic manner. Will bind the four numbers in full cloth for \$1.25 or in three-quarter leather for \$2.00. F. O. B. Seattle.

Sherman Printing & Binding Co.

Printer of Ophthalmology 807 Western Avenue SEATTLE

THE "SYSTEM" and THE "REMEDY"

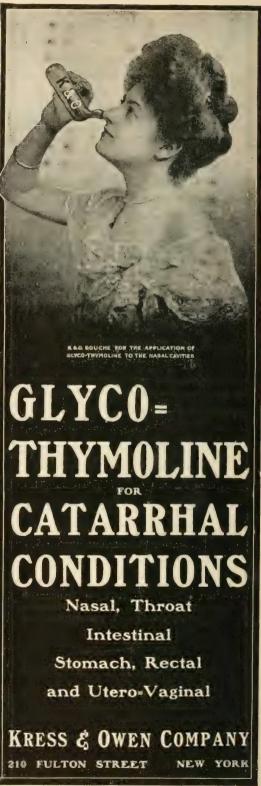
A popular magazine is exploiting a Remedy for the high cost of living suggested by Thomas W. Lawson. Its efficacy may be doubtful, but if really good, it will be a credit to Thos. W.

For thirteen years we have offered the Remedy for eliminating malpractice suits against reputable practitioners. Its efficacy has been proven, both in preventing and defending such actions.



PHYSICIANS DEFENSE COMPANY

Fort Wayne, Indiana



Injuries of the Eye

By HARRY VANDERBILT WURDEMANN, M.D.

Managing Editor of Ophthalmology; Associate Editor Ophthalmic Record, etc., etc., Seattle, Wash.

The Only Complete Book on the Subject in the English Language

In one beautiful octavo volume of 926 pages, with 24 color plates and 375 illustrations in the text.

Sold only by subscription. Cloth \$7.00; Half-morocco \$8.50, forwarding charges prepaid.

SOME EARLY COMMENTS

Ophthalmic Literature (Edward Jackson, Denver, Colo.), says: "Dr. Würdemann has given us the most extended book upon its subject; and, comparing it with its nearest rival, that of Praun, published in German, it shows its greatest superiority in the free use of illustrations.

"This book brings together the results of a large amount of practical experience; both that of its author and the recorded experience of the profession in general. To each section is appended an important bibliography of its subject. It also illustrates the very wide range of influence that ocular injuries may exert.

"Each case of injury to the eye differs somewhat from every other case that has been encountered. The best preparation to deal with such injuries is obtained by thoughtful study of many cases of the same general character. Not only are they to be studied clinically, but also as other surgeons have seen them and placed them on record in the literature. For this sort of study of the subject Dr. Würdemann's treatise offers better facilities than have ever before been available."

Casey A. Wood (Chicago) writes: "It will be a valued edition to my library. I have looked it over and can easily see what a tremendous amount of work you have done on it. I hope the medical profession will appreciate your labors and order the book to the extent it deserves."

Frank C. Todd (Minneapolis) writes: "I congratulate you upon your excellent work 'Injuries to the Eye.' I have observed that it is well illustrated and that I could find in it what I wanted when a reference text book on such a subject might be needed. Indeed, I have already found it very satisfactory for that purpose, as it is so exhaustive."

S. H. Shastid (Marion) writes: "I have certainly spent already a number of pleasant, as well as profitable, hours running through the pages of this magnificent volume. It will, I venture to predict, be the leading authority on its subject for very many years."

Eugene Smith (Detroit) writes: "I hasten to congratulate you. It is a magnificent work and will undoubtedly be appreciated."

A. Maitland Ramsay (Glasgow) writes: "Now your great work on eye ries is completed, I hasten to offer you my sincere congratulations."

CLEVELAND

Publishers of Standard Medical Books Exclusively CHICAGO, ILL. Ogden Avenue and Lincoln St.

1912 EDITION

I. E. MORGAN

Main 5891

Everything for the Auto Man but the Auto

Weed Chains Schebler Carburetors Ajax Tires (Guaranteed) Rex Metal Polish Buckeye Cleanser Kenyon Rain Coats Gould Storage Batteries Shaler Vulcanizers Prest-O-Lite Gas Tanks Prest-O-Lite Air Bottles Jericho Exhaust Horns Grinnell Gloves Klaxton Electric Horns Milwaukee Bumpers

Tires and Tubes Repaired——————————————————Storage Batteries Recharged

Morgan Auto Supply Co.,

Phone Main 5891

SEATTLE

1525 Westlake Av.

Fifty Per Cent Better Prevention=Defense=Indemnity

- All claims or suits for alleged civil malpractice, error or mistake, for which our contract holder,
 - Or his estate is sued, whether the act or omission was his own
 - 3 Or that of any other person (not necessarily an assistant or agent).
 - 4 All such claims arising in suits involving the collection of professional fees.
 - All claims arising in autopsies, inquests and in the prescribing and handling of drugs and medicines.
 - Defense through the court of last resort and until all legal remedies are exhausted.
 - Without limit as to amount expended.
 - You have a voice in the selection of local counsel.
 - If we lose, we pay to amount specified, in addition to the unlimited defense.
- 10 The only contract containing all the above features and which is protection per se. A sample upon request.

Medical Protective Co. Professional Protection Exclusively of Fort Wayne, Ind.

EVERY COAT WE TURN OUT A WINNER



Physicians' Coats for professional use. Made of white or sixty other shades, of washable material. Fast colors. Thoroughly shrunk before making. Made to measure.

We pay delivery charges to all parts of the world.

Our "Swatch Card" showing material, styles and prices, free upon request. DRESSING GOWNS, SMOKING JACKETS, BATH ROBES and HOSPITAL UNIFORMS a Specialty.

WEISSFELD BROTHERS

115 NASSAU STREET, NEW YORK CITY

Manufacturers of Physicians' Coats. The kind they all admire.

HENRY KIMPTON



AS always on hand a large stock of books on Diseases of the Eye, Medicine, Surgery, Gynecology, Pediatrics, Obstetrics, Anatomy, Physiology, etc., etc., and would be happy to forward catalogues and quotations upon receipt of particulars of subjects required. Address

HENRY KIMPTON

Medical Bookseller and Publisher,

London, W. C., England. 263 High Holborn.

Women of All Nations

Their Characteristics, Customs, Manners, Influence

Edited by T. Athol Joyce, M. A., and N. W. Thomas, M. A., Fellows of Royal Anthropological Institute

Contributors: Prof. Otis T. Mason, Smithsonian Institution; Mr. W. W. Skeat; Mr. Archibald Colquhoun; Dr. Theodore Koch Grünberg, Berlin Museum; Miss A. Werner, Mr. W. Crook, etc., etc.

Most readers of the "National Geographic Magazine" have read about or already possess this splendid work. The allotment for America is gradually being sold, and this may be the last announcement before the work goes out of print. Prompt action is therefore urged upon members who are interested.

For the Connoisseur's Library

This wonderfully fascinating new work, in four quarto volumes, contains a truthful and authoritative account of the curious and widely contrasting lives lived by the women of today in every part of the world. The vast number of rare photographic studies, obtained at great risk and outlay and here reproduced for the first time, can never be duplicated. The text has been written by well-known scientists with a regard for the piquancy and interest of the subject, which is shown by the novel and delightfully entertaining results which have been gained. Thus, as one reads, charmed by the pure human interest of the work, one unconsciously absorbs an intimate scientific knowledge of the Customs and Traditions, Peculiarities of Dress, Ideas of Beauty, Love-making, Betrothal, Marriage, Children, Characteristics of Widowhood, etc., among the women of all climes and countries. climes and countries.

Exquisitely Illustrated, Printed and Bound

OMENWOMEN

OF ALL OF ALL

NATIONS NATIONS

EDITED

MA

VOL. II

TA JOYCE TA JOYCE

M.A. & M.A. & NW.THOMAS NW.THOMAS

ASSELL CASSEL

EDITED

M.A.

VOL. I.

& CO

The work is in four superb quarto volumes, each volume measuring 8½ x 1½ inches. The binding is rich red Irish buckram, stamped in gold. The paper is extra heavy plate; the type, large and beautifully clear. There are more than seven hundred half-tone reproductions of photographs of women, 98 per cent of which have never before been used. There are also 25 dainty full-page plates in color, each a valuable picture in itself.

Send No Money, But Fill Out the Coupon and Mail Today

Simply fill out and mail to us the coupon below, attached to your letter-head. We will then ship you this superb four-volume work, all charges paid, for 5 days free examination. We know you will agree it is the most unique and valuable contribution to the study of Womankind that has been published. But if you should decide not to keep the books, return to us at our expense. You take absolutely no risk. If you keep them, pay us \$1.00 within five days and \$1.00 per month thereafter until the price, \$15.50, has been paid. If you would prefer to pay cash after acceptance, please indicate in coupon.

Cassell & Company

Publishers 43-45 East 19th St., New York



Here You May Read of

compared; feminine adorn-ments—savage and civilized; ments—savage and civilized; paint and powder—artificial colorings the world over; tattooing fashions—curious customs; ideas of modesty—how they vary; feminine charms—how world-wide ideas differ; love and court-ship—traditions and cus-toms; kissing customs among various races; mar-riage ceremonies compared: among various races; mar-riage ceremonies compared; woman's sphere in tribe and nation; woman in war; women as rulers; women's work; legends of women; witchcraft; psychology of sex, etc., etc.

Examine before purchas-ing the one work of its kind in the history of Literature.





Gentlemen:—Please send me, all charges paid, for 5 days free examination, one complete set of "WOMEN OF ALL NATIONS". If satisfactory, I agree to pay you \$1.00 within five days and \$1.00 per month thereafter until the price, \$15.50, has been paid. If not satisfactory, I will notify you.

Name.

Occupation

Address

I would prefer to pay { cash after acceptance. monthly.

LONDON

SEATTLE

OMAHA

Huteson Optical Company

Wholesale and Manufacturing Opticians

The careful and prompt filling of oculists' prescriptions our specialty, including the grinding of Toric Lenses and Kryptok Invisible Bifocals. Large stock of Artificial Eyes, both shell and reform, sent on selection.

1336 SECOND AVENUE Seattle, Wash.



W. A. PISHER, M. D., Pres. A. G. WIPPERN, M. D., Vice-Pres.

Chicago Eye, Ear **Nose and Throat** College

235 E. Washington St., CHICAGO, ILL.

A Post-Graduate School for Practitioners of Medicine.

Located in its own building two blocks from the court-house. Large hospital in building for Eye and Ear cases only. Hospital charges, including board, medicine and nursing, \$2.00 per day and up. This does not include Surgeon's charges for professional services. Abundant clinical material. Courses six weeks. Enter any time. Clinical teaching from 9 a. m. until 6 p. m. Free beds are provided for charity cases.

Wm. A. Fisher, M.D. J. R. Hoffman, M.D. Thomas Faith, M.D.

A. G. Wippern, M.D. H. W. Woodruff, M.D. H. H. Brown E. J. Gardiner, M.D. Brown Gardiner, M.D.

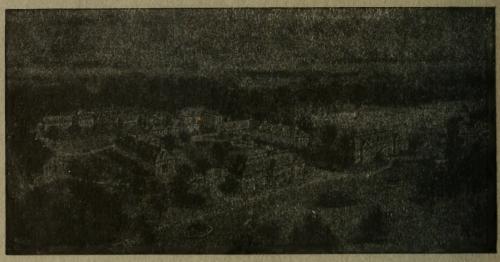
A. H. Andrews, M.D.
Oliver Tydings, M.D.
C. W. Gelger, M.D.
J. A. Cavanaugh, M.D.
Carl Wagner, M. D. R. G. Fisher, M.D.

Write for catalogue and information to

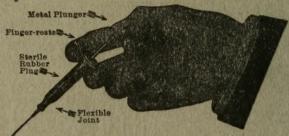
J. R. HOFFMAN, M. D., Secretary

A HOUSE PHYSICIAN IS APPOINTED IN JUNE AND DECEMBER

The Mulford Biological Laboratories



All Mulford Antitoxins, Serums, Bacterins, Vaccines, Tuberculins, etc. are prepared under the personal direction of experts. Our Laboratories at Glenolden, Pa., U.S.A., are operated under Government license and inspection. Rigid standardization, with bacteriologic and physiologic tests insure uniform reliability.



Every dose of Antitoxin, Curative Serums and Bacterins is furnished in a perfected aseptic glass syringe, with flexible needle joint, positive working piston, finger-rests—ready for instant use.

The Ideal Antitoxin and Bacterin Container

Diphtheria Antitoxin-Concentrated

Furnished in aseptic glass syringes, containing 1000, 2000, 3000, 4000, 5000, 7500 and 10,000 units.

Tetanus Antitoxin

Furnished in aseptic glass syringes, containing 1500, 3000 and 5000 units.

Anti-Dysenteric Serum

For Summer Diarrhea and Dysentery. In aseptic glass syringes, containing 10 c.c.

Anti-Meningitis Serum

(Anti-Meningococcic Serum)
In packages containing 2 aseptic glass syringes of
15 c.c. each, including special needle for intraspinal injection.

Anti-Pneumococcic Serum
In packages containing 2 aseptic glass syringes of 10 c.c. each.

Anti-Streptococcic Serum
In aseptic glass syringes of 10 c.c. each, and in 20 c.c. packages (2 aseptic glass syringes of 10 c.c.)

H. K. Mulford Company, Philadelphia

New York Chicago

St. Louis Atlanta

New Orleans Kansas City

Minneapolis San Francisco

Beatile Toronto

Please mention OPHTHALMOLOGY in writing advertisers.